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FAB 49

EGGS & POULTRY MEAT

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H. BROOKES
ASSISTANT EDITOR

EGGS (General)

1

The 14 MeV neutron activation analysis of Chinese foodstuffs for protein content.
Chuang, L. S.; Miller, D. A.; Lay, W. P.; Chiu, W. Y.
Journal of Radioanalytical Chemistry **38** (1/2) 279-289 (1977) [12 ref. En] [Sci. Cent., Chinese Univ. of Hong Kong, Hong Kong]

14 MeV neutron activation analysis (NAA) was carried out on 45 Chinese foodstuffs (including fruit, vegetables, nuts, seaweed, egg products, bean curd products and sea-foods) to determine their protein content. 13 Chinese foodstuffs ranging in protein content from 2.37% to 78.87% were employed for the calibration count relating N activity to protein content, determined by triplicate chemical (Kjeldahl) analyses for each foodstuff. Results for NAA, given in tabular form, show protein contents ranging from 1% (Lotus rootstarch) to 91% (sharks' fins). Food samples representative of each category were purchased from different sources and analysed to check possible variation; variation within samples was also checked. Unprocessed food showed a variation of $\pm 1.3\%$, and processed foodstuffs $\geq \pm 4.7\%$. On the basis of the results obtained, the estimated accuracy of the NAA protein detn. is 5-10%; this relatively high uncertainty is attributed to uncertainties concerned with calibration factors. SP

2

[Tests on stored boiled eggs.] Untersuchung zur Lagerung von gekochten Eiern.
Seeger, H.; Gemmer, H.
Archiv für Lebensmittelhygiene **28** (3) 100-103 (1977) [4 ref. De, en] [Staatliches Veterinär-Untersuchungsamt, Deutschordenstrasse 48, 6000 Frankfurt/Main 71, Federal Republic of Germany]

100 hard-boiled eggs were stored at 5°, 25° or 37° C and periodically examined for sensory and bacteriological changes during 3 months' storage. Tabulated results showed that at 5° C eggs with intact shells could be stored for 3 months with no detectable change; eggs with broken shells suffered sensory deterioration from 22 days onwards and bacterial growth in the egg white after 7 days; at 25° C, intact eggs showed sensory deterioration and bacterial growth after 13 days, broken eggs after 8 days; at 37° C, intact eggs showed significant changes after 7 days, broken eggs after 5 days. No wt. changes were observed after 20 days at 5° C; losses of 10.4 and 18.8% were found for intact and broken eggs respectively after 3 months. At 25° C wt. loss started after 2 days' storage, to reach 10.1 and 9.0% respectively after 13 days. At 37° C wt. losses after 13 days were only half of those at 25° C. Declaration of storage temp. and date of production (boiling) is proposed. RM

3

The effect of storage on the proteins of frozen liquid egg and spray-dried egg.
Parkinson, T. L.
Journal of the Science of Food and Agriculture **28** (9) 811-821 (1977) [7 ref. En] [Flour Milling & Baking Res. Ass., Chorleywood, Rickmansworth, Herts., WD3 5SH, UK]

Storage of spray-dried whole egg and egg-milk mixture for about 1 yr at 3-5° C resulted, in both cases, in a marked reduction in the proportion of insoluble proteins and an equally marked increase in the inert lipoprotein fraction of the soluble proteins; this fraction was clearly derived from the low density fraction of the yolk. Storage of frozen liquid egg for about 1 yr in the frozen state resulted in the insoluble protein fraction of the thawed egg having more water bound in it than did the corresponding fraction of the freshly-frozen egg, but in neither case did the insoluble proteins have as much water bound with them as those of the reconstituted spray-dried samples. Spray-drying resulted in only a partial reduction in the contents of ovalbumin, ovomucoid and conalbumin, and addition of milk to the whole egg before spray-drying improved the stability of these proteins. They appear to be little changed by freezing and storing in the frozen state. There is evidence that ovalbumin is present in a more stable form in processed egg products than in new-laid raw egg.
AS

4

Tylosin levels in egg of laying hen given medicated drinking water.
Iritani, Y.; Hidaka, S.; Kitabatake, T.; Sasaki, S.
Japanese Poultry Science [Nihon Kakin Gakkai-shi] **13** (6) 248-249 (1976) [5 ref. En] [Aburahi Lab., Shionogi & Co. Ltd., Shiga-ken, Japan]

140-day old White Leghorn hens were given 0.05% tylosin tartrate in drinking water ad lib. Tylosin, a macrolide antibiotic, was determined by microbiological assay in eggs laid by the treated hens. The detection limit was 0.15 ppm. Positive results were obtained for only 3 layings: the first day after withdrawal in birds medicated for 1 and 3 days (0.24 μg/ml and 1.93 μg/ml, respectively), and the fourth day after withdrawal in a bird medicated for 5 days (1.12 μg/ml). JRR

5

Effect of strain and age on the egg quality traits.
Kotaiah, T.; Mohapatra, S. C.; Anjaneyulu, P. S.
Indian Poultry Gazette **60** (3) 56-64 (1976) [29 ref. En] [Div. of Poultry Res., Indian Vet. Res. Inst., Izatnagar, Uttar Pradesh, India]

Egg quality traits were measured at 250, 300 and 350 days of age, in studies with 375 pullets, comprising 2 strains of White Leghorn and one strain of Australorp. The quality characteristics measured were (i) egg wt., (ii) shape index, (iii) albumen height, (iv) albumen index, (v) Haugh unit score, (vi) yolk index and (vii) shell thickness.

Differences, both between strains and between ages were highly significant for most quality traits. Australorps were superior to White Leghorns in terms of all characteristics except (vi); (i), (vi) and (vii) increased with age, but albumen quality decreased with advancing age. JRR

6

Process for the preservation of a foodstuff.
Liot SA
British Patent 1 473 037 (1977) [En]

Concentrates of water-dilutable foods, e.g. whole eggs, egg whites and egg yolks, are prepared by ultrafiltration with the optional addition of salts or sugars to increase the osmotic pressure, followed by the addition of sufficient antimicrobial agent such that the rate of destruction of microorganisms is greater than the rate of growth during the process. IFT

7

Thin layer chromatographic determination of aflatoxin B_1 in eggs.
Trucksess, M. W.; Stoloff, L.; Pons, W. A., Jr.; Cucullu, A. F.; Lee, L. S.; Franz, A. O., Jr.
Journal of the Association of Official Analytical Chemists 60 (4) 795-798 (1977) [8 ref. En]
[Div. of Food Tech., FDA, Washington, DC 20204, USA]

A method for determining aflatoxin in dairy products [see FSTA (1974) 6 4P449] was modified for eggs, initially by additional cleanup steps. The modified method proved practical for use in survey analyses and was sufficiently sensitive to detect aflatoxin B_1 at levels <1 ng/g in eggs from hens on experimentally contaminated feed and in spiked eggs; interfering compounds in eggs received from many different producing areas were eliminated. Although recovery was $>75\%$ when the aflatoxin was extracted immediately after spiking, recovery was usually $<30\%$ when the aflatoxin was extracted after more than 24 h. Adding NaCl, Na_2SO_4 or urea to the extracting solvent remedied this defect, which is thought to be related to the binding of aflatoxin to egg protein. AS

8

[Method of obtaining egg powder.]
Nazarov, V. D.; Volgin, V. D.; Tsarikov, N. N.; Lyalin, V. A.; Kuzin, V. K.
USSR Patent 567 430 (1977) [Ru]

A product of improved quality and extended shelf life is obtained by concn. of an egg mass by ultrafiltration using metalloceramic membranes with orifices of 0.7-2.5 μm average diam., dispersion to a particle size of 90-130 μm, and spray-drying with an air temp. of initially 200-215°C and finally 70-90°C. W&Co

9

Effect of supplementation of ascorbic acid on egg production and egg quality in White Leghorn pullets during summer.
Pandey, J. N.; Bajaj, M. R.; Mudgal, R. P.
Haryana Agricultural University Journal of Research 5 (4) 358-360 (1975) [10 ref. En]
[Dep. of Anim. Production Physiol., Haryana Agric. Univ., Hissar, India]

2 groups of White Leghorn pullets were fed either (i) a control diet or (ii) an experimental diet containing 50 mg ascorbic acid/kg food over a 10 wk period. Eggs collected each wk were subjected to egg quality measurements, e.g. shell thickness, egg wt., albumen index and yolk index. Tabulated results show the following average values for (i) and (ii) resp.: egg wt. 43.14 and 43.24 g; shell thickness 0.37 and 0.38 mm; albumen index 14.9 and 15.4; and yolk index 11.78 and 12.56. Such marginal increases in the ascorbic acid-treated group are unlikely to make supplementation with ascorbic acid profitable in egg production. SP

10

[The dynamics of hexachlorocyclohexane isomers (HCH) and DDT residues in poultry and eggs. II. Study of final residues of HCH isomers in a biological model.]
Szokolay, A.; Mad'aric, A.; Uhnak, J.
Hydinarsky Priemysel 18 (6/8) 262-272 (1976) [35 ref. Sk] [Vyskumny Ustav Hygieny, Bratislava, Czechoslovakia]

Eggs and fodder samples from 3 Slovakian regions were studied for contamination with HCH and DDT and/or DDE; the average contamination did not exceed that permitted in Czechoslovakia and abroad. However, peak values were several times above the limit. Eggs accumulated more residues of organochlorine insecticides than fodder, the residues being DDT, DDE and HCH β-isomer. Ecological studies and feeding experiments with chickens and egg-bearing hens, under conditions of experimental administration of HCH isomers, confirmed the significantly higher capacity for accumulation of the HCH β-isomers, compared with the remaining HCH isomers; this behaviour had previously been known for mammals only. The HCH isomers were present in poultry fat, muscle tissue and liver, and in eggs, under conditions of uniform exposure time, only as a function of the content in the feed and their degradation rate. [See FSTA (1977) 9 7Q107 for part I.] STI

11

[Residues of organochlorine pesticides in poultry meat and eggs in the Netherlands during the period March 1975-March 1976.]
Kan, C. A.; Bouwstra, E.
Voedingsmiddelentechnologie 9 (49) 9 (1976) [4 ref. Nl] [Inst. voor Pluimvee-Onderzoek 'Het Spelderholt', Beekbergen, Netherlands]

Trends in organochlorine pesticide residue concn. in eggs and poultry in the Netherlands are briefly discussed. No organochlorine residue concn. exceeding current Netherlands tolerances were detected in 22 samples of eggs during the period

March 1975-March 1976. In 250 samples of poultry fat studied during this period, concn. of DDT, dieldrin and aldrin residues exceeded Netherlands tolerances in 1 sample each. Organochlorine residue concn. in poultry and eggs have decreased considerably since 1972-1973. AJDW

12

[Contents of lecithin and other choline compounds in food plants.] Die Gehalte an Lecithin und anderen Cholin-Verbindungen in Nahrungspflanzen.
Müller, H.
Fette Seifen Anstrichmittel 79 (6) 259-261 (1977) [7 ref. De, en] [Bundesforschungsanstalt für Ernährung, Rüdesheimer Strasse 12-14, Aussenstelle 6222 Geisenheim, Federal Republic of Germany]

Lecithin and other choline compound contents were determined in potatoes and 16 other vegetables, and compared to those in whole milk and eggs. A method was developed allowing differential detn. of lecithin (L), lysolecithin, glyceryl phosphoryl choline (GPC), phosphoryl choline (PC) and cytidine-5'-diphosphocholine and free choline derived by hydrolysis of acetylcholine. After extraction of L, water soluble components were separated by ion exchange chromatography and determined, after acid hydrolysis, by colorimetry as the choline dipicrylamine complex. Tabulated results showed choline contents (μg/g) of 4 (egg with shell) -894 (cabbage), GPC + PC contents of 2 (cabbage) - 150 (whole milk) and L contents of 0.2 (Chinese cabbage) - 141 (spinach). The choline distribution was also affected by var., maturity and storage. RM

13

Production, nutritional value and baking quality of soy-egg flours.
Erdman, J. W., Jr.; O'Connor, M. P.; Weingartner, K. E.; Solomon, L. W.; Nelson, A. I.
Journal of Food Science 42 (4) 964-968 (1977) [20 ref. En] [Dep. of Food Sci., Univ. of Illinois, Urbana Illinois 61801, USA]

Full fat soy (S), 85% soy + 15% whole egg (85S) and 75% soy + 25% egg (75S) flours were produced and evaluated both nutritionally and as a 12% flour supplement in wheat breads. Dehulled, blanched, wet milled soybeans and whole eggs were mixed, drum dried, and milled to produce 85S and 75S flours. Nutrient analyses indicated increased fat, pantothenic acid, Ca, and Na with addition of egg to S. Although protein content decreased with egg addition as compared to S, net protein ratios and protein efficiency ratios showed increases in protein quality. 12% S bread resulted in a depressed loaf vol. as compared to 85S, 75S and 100% wheat breads. The addition of 0.5% sodium stearoyl-2-lactylate increased loaf vol. of 100% wheat and S, but not 85S or 75S bread. IFT

14

Studies on the incorporation of mulberry leaves (Morus indica) in layers mash on health, production and egg quality.
Narayana, H.; Setty, S. V. S.
Indian Journal of Animal Sciences 47 (4) 212-215 (1977) [13 ref. En] [Univ. of Agric. Sci., Hebbal, Bangalore 560 024, India]

The effect of incorporating mulberry leaves in the diet of 40 hens on egg production and quality was studied. The birds were divided into 5 groups and fed diets containing $\leq 6.0\%$ mulberry leaves; each with a crude protein content of 16.4% and 2400 ± 50 Kcal. Egg quality measurements showed hens fed 3 and 6% mulberry leaf had higher egg wt., darker yolk colour and lower yolk wt. than those fed diets containing $< 3\%$ mulberry leaves. Shell thickness and Haugh unit were not significantly influenced by diet. Statistical analyses of the parameters used did not reveal any deleterious effect on the egg characteristics measured. It was concluded that shade-dried mulberry leaves are a satisfactory ingredient for feeds for layers. SP

15

Sensory attributes of commercial egg substitutes.
Leutzinger, R. L.; Baldwin, R. E.; Cotterill, O. J.
Journal of Food Science 42 (4) 1124-1125 (1977) [10 ref. En] [Dep. of Food Sci. & Nutr., Univ. of Missouri, Columbia, Missouri 65201, USA]

Sensory evaluations were conducted on liquid whole egg and 2 commercial egg substitutes prepared as scrambled egg and used in a plain cake. The compositions of the substitutes were: (i) liquid egg white 82%, corn oil 10% and dried skim-milk 7%; and (ii) liquid egg white 84%, water 7%, partially hardened soybean oil 3%, isolated soyprotein 2.5% and egg white solids 1.8%. Consumers scored whole egg significantly higher in flavour than either substitute but were unable to distinguish between the aromas of (i) and of whole egg. The texture of (i) was judged similar to whole egg in descriptive scoring tests with experienced panelists. Also, this panel rated whole egg superior to both (i) and (ii) in aroma and flavour. No significant differences were apparent in colour. The 2 egg substitutes differed significantly in flavour and aroma according to both the consumer and the laboratory panels. Cake vol. decreased when substitutes were used, and (ii) had a flavour which persisted in the baked products. IFT

16

Comparative effects of selenium on metabolism of methylmercury by chickens and quail: tissue distribution and transfer into eggs.
Sell, J. L.
Poultry Science 56 (3) 939-948 (1977) [23 ref. En] [Anim. Sci. Dep., N. Dakota State Univ., Fargo, N. Dakota, USA]

Hens and Japanese quail (Coturnix coturnix japonica) were fed 0 or 8 p.p.m. Se as sodium selenite and 0 or 20 p.p.m. Hg as methylmercuric chloride ad lib. for 21 days. Egg production was reduced in both spp. by Hg, but the effect was alleviated in quail but not hens by Se. Quail deposited twice as much Hg in eggs (in terms of % total dose) as hens, and feeding of Hg + Se increased the proportion of Hg deposited in the egg white and whole egg of both spp. Se altered the distribution of Hg within the egg, increasing Hg concn. in the white and decreasing that in the yolk. The data generally indicate major differences in the effect of Se on Hg metabolism between the 2 spp. JRR

17

[Lead contents in the feed and in tissues of laying hens.]

Renon, P.; Cantoni, C.

Archivio Veterinario Italiano 28 (1/2) 49-51 (1977) [30 ref. It, en] [Istituto di Ispezione degli Alimenti di Origine Anim., Univ. degli Studi di Milano, Milan, Italy]

Data are given for Pb concn. in the tissues and eggs of 20 laying hens which had been fed diets containing 5 p.p.m. Pb for 6 months. Mean values (DM basis) were (p.p.m.): muscle 1.23; liver 1.44; bone 9.34; egg yolk 0.46; and egg white 0.74. AJDW

18

[Purification and identification of phosphatidylcholine and lysophosphatidylcholine.]

Ravazzoni, C.; Donelli, G.; Varallo, A.

Rivista Italiana delle Sostanze Grasse 54 (10) 432-438 (1977) [11 ref. It, en] [Istituto di Chimica Organica ed Analytica dell'Univ., Milan, Italy]

The purification, identification and some characteristics of phosphatidylcholine from egg and soybeans and of synthetic products are described. Purification involved repeated acetone precipitation from ether solution, followed by column chromatography on alumina; identification was by silica gel TLC. Preparation and identification methods are also described for the water-soluble intermediates lysophosphatidylcholine and glycerophosphorylcholine. RM

19

Clearance of sulfamethaoxazole in eggs and tissues of chickens.

Oikawa, H.; Nakamoto, K.; Hirota, K.; Katagari, K.

Poultry Science 56 (3) 813-821 (1977) [21 ref. En] [Aburahi Lab., Shionogi & Co. Ltd., Koka-cho, Shiga Prefecture, 520-34, Japan]

Sulfamethoxazole (SMX), a chemotherapeutic agent, was fed to White Leghorn hens at 0.2 or 0.4% in the feed for 5 days and eggs were analysed daily for drug concn. for 10 days after drug withdrawal. Concn. in breast muscle, skin, fat and various organs were determined in broiler chickens fed a similar diet. Egg whites from hens fed 0.2% SMX had <0.1 p.p.m. drug by day 3 after withdrawal, but yolks took until day 8 to reach this level. Initial concn. in eggs from the group fed 0.4% SMX were higher, and white and yolk SMX levels fell to <0.1 p.p.m. in 5 and 9 days, resp. Levels in muscle and fat were <0.1 p.p.m. after 3 days, and also in skin after 4 days. Intramuscular administration of the drug produced similar clearance patterns. JRR

20

Determination of the phenolic metabolites of carbofuran in plant and animal matrices by gas chromatography of their 2,4-dinitrophenyl ether derivatives.

Cook, R. F.; Jackson, J. E.; Shuttleworth, J. M.; Fullmer, O. H.; Fujie, G. H.

Journal of Agricultural and Food Chemistry 25 (5) 1013-1017 (1977) [8 ref. En] [Res. & Development Dep., FMC Corp., Agric. Chem. Div., Middleport, New York 14105, USA]

A procedure suitable for the detn. of the phenolic metabolite residues of carbofuran (2,3-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate) is described. The method involves release of the conjugated phenolic residues by acid hydrolysis, ethoxylation of one of the phenolic metabolites, separation of the phenols from possible carbamate residues, and then formation of the 2,4-dinitrophenyl ether derivatives. A carbon clean-up column was required for potatoes and a Florisil clean-up column for eggs and poultry tissue. No clean-up column was used for milk and cow tissue. Detection of the derivatized phenols was accomplished by gas chromatography using an N-specific detection system. Method sensitivity achieved for each phenol component was 0.10 p.p.m. for potatoes, 0.02 p.p.m. for milk, 0.05 p.p.m. for tissue and 0.05 p.p.m. for eggs. Recovery for the phenolic metabolites averaged 69% over all the matrices analysed. AS

21

[Pesticide residues in eggs of hens fed rations containing DDT and dieldrin.] (In 'Proceedings of the 20th World Veterinary Congress' [see FSTA (1978) 10 3G126].) [Lecture]

Delchev, Kh.; Tsvetkova, Ts.; Zhechev, G.

1, 760-762 (undated) [Ru] [Vet. Inst. Zaraznykh i Parazitnykh Boleznei, Sofia, Bulgaria]

24 Leghorn hens were fed over 4 months a mixed feed incorporating 7 p.p.m. DDT and 7 p.p.m. dieldrin. The eggs were analysed at weekly intervals for the 4 months, and for 8 after cessation of antibiotic administration. TLC and gas chromatography with electron capture were used to analyse a total of 125 eggs. DDT increased to a peak of 40.6 p.p.m. and dieldrin to 23.8 p.p.m. after approx. 18 wk. There was still approx. 2 and 1 p.p.m., resp., detected in the yolk (and in the meat and fat of some slaughtered birds) at the end of the experiment. Metabolites of DDT were also detected. HBr

22

[Bean curd product.]
Nippon Tampaku Kogyo (Protein Industry) Co. Ltd.
Japanese Patent 5 224 582 (1977) [Ja]

Raw egg is added to an aqueous dispersion of soy protein and the mixture atomized in a high temp. atm. to yield a pulverized material which is cooked in water, coagulated and then moulded. IFT

23

Quantitative analysis of vitamin A in cereal products by high speed liquid chromatography.
Dennison, D. B.; Kirk, J. R.
Journal of Food Science 42 (5) 1376-1379 (1977) [15 ref. En] [Dep. of Food Sci. & Human Nutr., Michigan State Univ., E. Lansing, Michigan 48824, USA]

A high speed liquid chromatographic method is described for the detn. of vitamin A. Retinol is separated isocratically at ambient temp. via high pressure liquid adsorption chromatography on silica from the nonsaponifiable fraction of the sample. Quantitative detn. is accomplished by monitoring the UV absorbance of retinol at 313 nm. Recovery of vitamin A as retinol in cereal products (ready-to-eat breakfast foods based on corn, wheat and rice) was 94.3 ± 2.01%. The primary advantages of this procedure are the use of an isocratic solvent system for the separation of retinol and the elimination of carotenoid interference and toxic chromophore-producing reagents associated with the Carr-Price, trifluoro- and trichloroacetic acid methods. The method offers improved precision for the detn. of vitamin A, increases the number of vitamin A assays that can be performed/day, and shows applicability to other food products. Typical chromatograms for cereals, infant formula and dehydrated whole egg are shown. IFT

24

Effect of feathering on the performance of Desi, White Leghorn and Rhode Island Red chickens.
Titendra Kumar; Acharya, R. M.
Indian Journal of Animal Sciences 45 (9) 660-663 (1975) [14 ref. En] [Haryana Agric. Univ., Hissar, 125 004, India]

Chicks of the breeds Desi, White Leghorn (WL) and Rhode Island Red (RIR) were scored for feathering at 10 days of age. Results showed that the rapid-feathering chicks of the 3 breeds were heavier than the slow-feathering chicks, the difference being significant in WL and Desi. Eviscerated wt., eviscerated % and egg wt. were greater for rapid-feathering chicks. The differences between rapid and slow-feathering pullets in respect of egg shape index, Haugh unit score, shell thickness, yolk index and yolk colour were not significant in any of the 3 breeds. It is concluded that the rate of feathering has no effect on egg quality traits, but that the selection for early-feathering is desirable to improve the overall performance of chicks. SP

25

[Concentrated egg composition.]
Taiyo Food Co. Ltd.
Japanese Patent 5 227 224 (1977) [Ja]

Compositions for use in the production of sponge cakes or other confectionery comprise eggs plus water, cane sugar and maltitol. IFT

26

Egg inspecting apparatus.
Saito, H.; Kimura, K. (Kewnie Co. Ltd.)
United States Patent 4 039 259 (1977) [En]

Egg inspection apparatus for detecting blood-containing, addled or turbid eggs or eggs affected with bacteria employs light emitting means with a light source for projection through an egg. A first light has a wavelength which is appreciably absorbed by a content of the egg, and a second light has a wavelength which is not appreciably absorbed by a content of the egg. The apparatus employs photo-sensitive means for detecting signals, light filtering apparatus and a means for comparing output signals. IFT

27

Studies on the influence of leaf protein concentrate and dehydrated alfalfa-meal in layers.
Reddy, B. S. V.; Brahmakshatriya, R. D.; Rao, B. S.; Moorti, T. V.
Indian Journal of Animal Sciences 45 (11) 885-892 (1975) [12 ref. En] [GBP Univ. of Agric. & Tech., Pantnagar 263 145, India]

72 nine-month-old White Leghorn hens were fed diets of white maize (WM), WM + 9% leaf protein concentrate (LPC), yellow maize (YM) + 9% LPC, YM + 6% LPC, YM + 3% LPC, YM + 3.32% groundnut (GN) cake, YM + 6.63% GN cake, YM + 9.95% GN cake or YM + 7.3% dehydrated lucerne meal (DLM). LPC at 3, 6 and 9% levels was found to be as effective as GN-cake (at similar protein level) for egg production, and to maintain egg quality factors (egg wt., shape index, sp. gr., egg shell thickness, albumen index, Haugh units and yolk index). Better colour and higher vitamin A content in egg yolk was obtained with diets containing LPC or DLM than diets containing GN-cake. Cost and return analysis indicated there was no significant difference in the net profits from the different diets fed. SP

28

Limitation of spirit blue agar for detection of lipolytic microorganisms in egg products.
Paul, M. E.; Potter, N. N.
Journal of Food Science 42 (5) 1402-1403 (1977) [8 ref. En] [Dep. of Food Sci., Cornell Univ., Ithaca, New York 14853, USA]

Gross differences in lipolytic bacterial counts in egg products were obtained using Spirit Blue Agar and Polysorbate Emulsion Agar. Changes in total aerobic, proteolytic and lipolytic counts were monitored in unpasteurized liquid whole egg and in 2 egg substitutes held at 12°C for ⩽10 days. Spirit Blue Agar, commonly recommended for the

enumeration of lipolytic bacteria, gave suppressed counts in the presence of large numbers of proteolytic bacteria. Polysorbate Emulsion Agar gave more reliable lipolytic counts when lipolytic and proteolytic organisms were present together in the egg products. IFT

29

[Flibol E® residues in eggs following treatment of inserts in egg boxes.] Über Rückstände von Flibol E® in Eiern nach Behandlung der Höckereinsätze von Eierkisten.
Luckas, B.; Steinbrink, H.
Zeitschrift für die Gesamte Hygiene und ihre Grenzgebiete 23 (8) 560-561 (1977) [5 ref. De, en, ru] [Bezirks-Hygieneinspektion, Rostock, German Democratic Republic]

Studies on the potential for treatment of egg carton inserts with the insecticide Trichlorphon to control cockroaches are briefly described. It was found, however, that the Trichlorphon and its decomposition product DDVP migrated through the egg shell, often giving residue concn. in the egg in excess of current max. tolerances (20 mg/kg) in the German Democratic Republic. It is therefore concluded that this method is unsuitable for control of cockroaches in egg cartons. IN

30

The variation of peroxide index (TBA index) of the eggs during conservation. (In 'Proceedings of the 20th World Veterinary Congress' [see FSTA (1978) 10 3G126].) [Lecture]
Popa, G.; Buruiana, L. M.; Hadarag, E.
1, 873-874 (undated) [En] [Dep. of Biochem. & Foods Control, Vet. Fac., Bucharest, Romania]

Changes in the TBA value of vacuum-dried whole egg and egg yolk during storage (in plastics bags) for > 1 yr were studied. A table of results is given. TBA value of both products increased steadily up to the 4th month of storage, then decreased slowly. The TBA value tended to be higher and to increase more rapidly in dried whole egg than in dried yolk. AJDW

31

[Residues of mercury in eggs.]
Herrera Marteache, A.; Polo Villar, L. M.; Pozo Lora, R.; Gallardo Cespedes, A.
Alimentaria No. 86, 43, 45-46, 48-50 (1977) [41 ref. Es] [Catedra de Bromatologia y Microbiologica de los Alimentos, Fac. de Vet., Univ. de Cordoba, Cordoba, Spain]

Hg was determined by flameless AAS in the yolk and albumen of a total of 127 samples of eggs, from 15 provinces in Spain. A table of results is given. Mean Hg concn. was 0.022 p.p.m. in both yolk and albumen. Ranges of values for Hg concn. were: yolk 0.017-0.077; and albumen 0.017-0.046 p.p.m. 6.30% of samples had Hg concn. greater than the FAO/WHO recommended max. value of 0.030 p.p.m. The highest Hg concn. were recorded in eggs from Zamora province; the lowest were recorded in eggs from Alicante province. It is concluded that Hg concn. in eggs in Spain do not present a significant health hazard. AJDW

32

Determination of total arsenic residues in chicken eggs.
Daghir, N. J.; Hariri, N. N.
Journal of Agricultural and Food Chemistry 25 (5) 1009-1010 (1977) [7 ref. En] [Dep. of Anim. Sci., Fac. of Agric. Sci., American Univ. of Beirut, Beirut, Lebanon]

2 levels (50 and 100 p.p.m.) of 3-nitro-4-hydroxyphenylarsonic acid (3-nitro) were fed to different groups of White Leghorn layers for a period of 15 wk. As residues in eggs laid by these hens were determined all through the experimental period at almost weekly intervals by a spectrophotometric method sensitive to 0.05 p.p.m. Eggs laid by hens receiving 100 p.p.m. 3-nitro in feed contained greater amounts of As at any time point. As residues in eggs laid by both groups increased up to the 4th-5th wk, then decreased. Max. amount found was 0.240 p.p.m. As residues determined 2 wk after the withdrawal of the drug from the feed were negligible. DIH

33

[Effect of feeding of hens on amino acid composition of the eggs.]
Rudavskaya, A. B.; Tishchenko, E. V.
Tovarovedenie 9, 56-58 (1976) [Ru]

To determine whether part of the grain in laying hens' rations could be replaced with boiled potatoes, 3 groups of hens were fed for 30 days with (i) the standard ration based on mixed feed (control), or (ii) or (iii) the same ration with 25% and 50% of the ration, resp., replaced with boiled potatoes. The eggs were then analysed by Hitachi ILC-BC3 amino acid analyser. Results are tabulated. The total amino acid content of the egg white dropped from 11.44% with (i) to 11.38% with (ii) and to 11.06% with (iii). Corresponding figures for the yolk were 14.98, 14.92 and 14.47%. In both the white and the yolk, the decline in the essential amino acids was less pronounced, and the contents of lysine and methionine increased. HBr

34

Studies on the preservation of eggs under tropical conditions.
Rahman, M. A.; Quddus, M. A.; Ahmed, S.
Bangladesh Journal of Scientific and Industrial Research 12 (1/2) 51-61 (1977) [24 ref. En] [BCSIR Lab., Food Tech. & Nutr. Res. Div., Dacca, Bangladesh]

The following methods were used to preserve shell eggs under tropical conditions (ambient temp. 30° C, RH 83%): control, no treatment; vacuum desiccation over $CaCl_2$ at 0.20 lb/in^2; refrigeration at 5° C; 3 s dip in 2% crystal violet; 3 s dip in linseed

oil; and 3 s dip in Ovalixir (a preparation of locally available cheap raw materials, to be patented). Eggs were examined weekly up to 10 wk and results for yolk indices, albumen indices, % thin and thick white, % wt. loss, condition of shell, egg white, yolk and smell, condition of hard boiled and fried eggs are shown in tables. Ovalixir-treated eggs retained internal and external quality for ≤70 days of preservation, excellent taste, flavour and overall texture for ≤56 days, and baking properties indistinguishable from fresh eggs for ≤65 days. RM

35

[Optical method and device for automatic scanning of eggs for cracks or breaks in the shell.] Verfahren und Vorrichtung zum automatischen Überprüfen von Eiern auf Risse oder Bruchstellen in ihrer Schale.
Bol, J. (Germany, Federal Republic of, Battelle-Institut eV)
German Federal Republic Patent Application 2 605 721 (1977) [De]

36

[Egg pack.] Eierverpackung.
Ey, A.
German Federal Republic Patent Application 2 604 564 (1977) [De]

Rectangular egg pack of thermoformed plastics film consists of a lower tray with recesses for accommodating the eggs, and projections rising above the height of the rim in between the recesses. A lid hinged to the tray along one side has complementary recesses to receive the upper portions of the eggs, and projections in the same locations as in the tray for engaging the lower projections. When closed, the lid is secured by press-stud members along the side opposite the hinge. The special shape (frustroconical) of locking pins on the lid projections allows the pack to be opened smoothly once the press-stud members have been unlocked, so that damage to the eggs due to pack distortions which can occur during opening of conventional packs are prevented. W&Co

37

Meat analog from agglomerated protein.
Weigle, D. C. (Procter & Gamble Co.)
United States Patent 4 045 590 (1977) [En]

A mixture of fat and 2 heat-coagulable proteins is contacted with water at a temp. sufficient to coagulate only 1 of the proteins, e.g. egg proteins or soy protein isolates. The resulting agglomerates are then heated to coagulate the second protein, e.g. soy proteins, thereby producing a simulated comminuted meat product, which is particularly suitable for use in patties, hamburgers, meat loaf products or dishes such as chilli in which the consumer is used to natural meat products in particulate form. GL

38

[Dietetic poultry and egg dishes.]
Buriankova, J.; Heldtova, M.
Hydinarsky Priemysel 19 (4) 146-158 (1977) [6 ref. Sk] [Vyskumny Ustav Hydinarskeho Priemyslu, Bratislava, Czechoslovakia]

A manufacturing programme for the production of dietetic dishes from poultry raw materials was designed based on the dietary system and various types of diets in Czechoslovakia. The following groups of products were studied: canned products, frozen ready-to-serve dishes and semi-manufactured products, mayonnaises, smoked products and powdered homogenized mixtures made from dried whole eggs. STI

39

Distributions of and relations between Haugh unit, shell thickness, and other measures in a survey of eggs at a packing station.
Stewart, D. A.; Montgomery, R. H.
Record of Agricultural Research 25, 77-81 (1977) [3 ref. En] [Biometrics Div., Dep. of Agric. for N. Ireland, Belfast, UK]

25-300 eggs from each of 112 batches of eggs received at a commercial packing station in March 1972 were used in a study on the interrelations of hen age, Haugh score, shell thickness, % second quality eggs, % reject eggs, and % cracked and broken eggs. Tables of results are given (mean values with skewness and kurtosis estimates) together with correlation coeff. between the variables studied. The results show that % cracked and broken eggs was significantly correlated with all the other variables studied; % reject eggs was significantly correlated with Haugh score and hen age; % second quality eggs was significantly correlated with Haugh score; and shell thickness and Haugh score were both significantly correlated with hen age. However, Haugh score was not significantly correlated with shell thickness. Implications of the results for sampling in quality control programmes are discussed. AJDW

40

The identification of weak-shelled eggs at the packing station.
Foster, W. H.
Record of Agricultural Research 25, 33-37 (1977) [11 ref. En] [Agric. Res. Inst., Hillsborough, Co. Down, UK]

Eggs of 3 wt. ranges (50-55, 55-60 and 60-65 g) laid by hens of 11 strains (35, 50 or 65 wk of age at the time of the study) were used in an investigation into relationships between shell thickness (evaluated on the basis of sp. gr. determined by flotation in brines of various concn.), and the likelihood of eggs breaking during subsequent transport to a retail outlet (simulated by a drop test). After the drop test, shell thickness of each egg was measured. The results show no significant correlation between sp. gr. grade of eggs and their

incidence of breakage during the drop test. Incidence of breakage differed significantly among hen strains and among hen ages, but not among egg wt. Shell thickness was significantly ($r = 0.68$) correlated with egg sp. gr. These results are discussed in relation to literature data. AJDW

41

[Method for preservation of eggs.]
Krivopishin, I. P.; Emel'yanov, B. V.; Tregubov, B. A. (**Union of Soviet Socialist Republics,** Vsesoyuznyi Nauchno-issledovatel'skii i Tekhnologicheskii Institut Ptitsevodstva)
USSR Patent 577 009 (1977) [Ru]

Eggs are preserved by dipping in a melt, e.g. of paraffin wax, to form a protective film on the shell. To increase storage life while retaining nutritive value and flavour, the eggs are dipped in the melt at 40-45° C and are then treated for 10-30 min in air containing 1-3 mg ozone/l. W&Co

42

Shelf stable, semi-moist simulated egg.
Burkwall, M. P., Jr. (Quaker Oats Co.)
United States Patent 4 046 922 (1977) [En]

A semi-moist, simulated egg product contains 1-35 wt.% egg solids, 1-30 wt.% water absorbing hydrocolloid, 10-30 wt.% high protein binding agent, sufficient water to give a final moisture content of 20-40 wt.%, 5-35 wt.% sugar or sugar equivalent, an acid or acid salt to adjust the pH to 4.5-6.9 and an antimycotic to increase the shelf stability. GL

43

[Prepared egg product.]
Taiyo Food Co. Ltd.
Japanese Patent 5 231 028 (1977) [Ja]

Powdered egg or raw egg is combined with water containing liquid condiments and the resulting mixture agitated with a small amount of glucono-δ-lactone to bring about gelling. IFT

44

[Effect of temperature on bulk egg viscosity.]
Aret, V. A.; Koryachkin, V. P.; Rodionov, A. Kh.
Izvestiya Vysshikh Uchebnykh Zavedenii, Pishchevaya Tekhnologiya No. 3, 93-96 (1977) [5 ref. Ru] [Kemerovskii Tekh. Inst. Pishchevoi Promyshlennosti, Kemerovo, USSR]

Thixotropy was observed in egg melange when measuring its viscosity in a rotary viscometer. The character of the flow curves using logarithmic coordinates at a given temp. within the speed gradient ranging from 3 to 437.4 s^{-1} shows that egg melange can be classed as a Herschel-Balkli medium. When the temp. was raised from 20° to 60° C the limiting stress of displacement and the k coeff. dropped according to a parabolic law, but the level index 'n' exhibited a slight linear increase. At temp. at which the proteins are denatured, the limiting stress of displacement and the k coeff. soared, while the n index remained practically unchanged. The rheological constants k and n were determined mathematically using the method of means, following experimental detn. of the limiting stress of displacement. STI

45

Incorporation of sodium bicarbonate into laying rations. I. Effect on egg production and hatchability.
El-Gammal, A. M.; Makled, M. N.
Beiträge zur Tropischen Landwirtschaft und Veterinärmedizin 15 (2) 173-176 (1977) [10 ref. En, de, ru, fr, es] [Fac. of Agric., Assiut Univ., Assiut/AR, Egypt]

Replacing NaCl at 0.67% by $NaHCO_3$ at 1.0 or 2.0% of the rations in 2 breeds of pullets (Rhode Island Red and Fayoumi) resulted in increased egg laying rate in 1 breed, decreased laying rate in the other. There was no significant effect on egg wt., but egg shell quality improved as a result of increased Ca content in the shells of eggs laid by both breeds. [See following abstr. for part II.] RM

46

Incorporation of sodium bicarbonate into laying rations. II. Effect on egg quality.
El-Gammal, A. M.; Makled, M. N.
Beiträge zur Tropischen Landwirtschaft und Veterinärmedizin 15 (2) 177-183 (1977) [26 ref. En, de, ru, fr, es] [Fac. of Agric., Assiut Univ., Assiut/AR, Egypt]

The replacement of 0.67% NaCl in the rations by 1% $NaHCO_3$ led to improvement of several egg quality characteristics in Rhode Island Red pullets: increased shell thickness from 220 to 335 μm Ca in shell from 39.9 to 43.0%, thick albumen height from 4.7 to 5.6 mm, Haugh units from 69.5 to 78.0, and yolk index from 39.8 to 42.6%; however, yolk colour score decreased from 6.2 to 5.8. Further improvement was achieved by increasing the $NaHCO_3$ content of the diet to 2%. No improvement was observed for Fayoumi pullets. [See preceding abstr. for part I.] RM

47

The effects of dietary phosphorus on productive performance and egg quality of ten strains of White Leghorn.
Hamilton, R. M. G.; Sibbald, I. R.
Poultry Science 56 (4) 1221-1228 (1977) [18 ref. En] [Anim. Res. Inst., Agric. Canada, Cent. Exp. Farm, Ottawa, Ontario K1A 0C6, Canada]

Diets containing 0.45-0.58% available and 0.38-0.48% inorganic P were fed to hens for 357 days. Level of P had no effect on egg production, egg wt., or incidence of blood spots but did have a small effect on egg sp. gr. A level of 0.45% available P is sufficient for laying hens. JRR

48

Effects of age of the bird and season on the gross components of egg and yolk lipid and cholesterol in White Leghorn.
Chand, D.; Razdan, M. N.
Haryana Agricultural University Journal of Research 6 (1) 66-72 (1976) [17 ref. En] [Dep. of Anim. Production Physiol., Haryana Agric. Univ., Hissar, India]

30 chicks (initially 5 months of age) were fed standard layer's mash ad lib. from April 1972 to May 1973. During the last wk of every month eggs were analysed for egg wt., egg albumen, yolk wt., yolk cholesterol and shell wt. Results show the heaviest eggs were found during Jan. and Feb., when the birds were 15-16 months old. Larger eggs had, in general, heavier yolks. Yolk wt. increased with age up to 14 months of age and then remained approx. constant except during May (at 19 months old) when wt. was reduced. Albumen wt. and albumen % of egg wt. were inversely related, with high and low albumen % at 6 and 17 months old, resp. and high and low albumen wt. at 17 and 6 months old, resp. Egg shell wt. was at a max. in Jan. and Feb. Egg yolk lipid concn. was highest during May (7 months old) and egg yolk cholesterol concn was highest in Nov. and May (13 and 19 months old, resp.). Results are presented in graphs. SP

49

[Poisoned eggs.]
Clausen, B.; Wolstrup, C.
Dansk Veterinaertidsskrift 60 (14) 662-663 (1977) [3 ref. Da]

The potential hazard from use of poisoned hens' eggs for control of rooks, etc. is briefly considered, with reference to the possibility that these eggs may accidentally be consumed by humans. 2 such poisoned eggs studied contained > 60 and > 124 mg parathion, more than the lethal dose for a human. AJDW

50

[Results of veterinary inspection of fresh eggs.] Erfahrungen bei der tierärztlichen Untersuchung von Frischeiern.
Bentler, W.
Archiv für Lebensmittelhygiene 28 (1) 31-35 (1977) [9 ref. De, en] [Staatlicher Veterinäruntersuchungsamt, Druseltalstrasse 61, 3500 Kassel, Federal Republic of Germany]

The wt. loss of eggs stored at room temp. (18-20° C, 30-40% RH) or under refrigeration (5-8° C, 58-65% RH) on the day of laying or the following day was investigated. Tabulated results showed that the critical wt. loss of 1.5 g occurred after 10 days at room temp., 28 days under refrigeration. No difference was observed between freshly laid and 1 day old eggs, or between wt. classes. Considerable decreases of the egg yolk and egg white indices were observed after brief storage (10 days) at room temp. but not after long cold storage (< 30 days). An egg yolk index of 40% is proposed as an index of freshness. Imperfections in the labelling of eggs are discussed, and better controls suggested. RM

51

[Research and development of instant egg products.]
Micinska, V.; Jarossova, M.
Hydinarsky Priemysel 19 (4) 169-176 (1977) [16 ref. Sk] [Vyskumny Ustav Hydinarskeho Priemyslu, Bratislava, Czechoslovakia]

The development of improved dried egg products using present equipment is discussed. It was established that instant egg products could be produced by 3 methods, agglomeration, foam drying and freeze-drying, using special equipment. It is suggested that dried egg products with improved sensory and technological properties could be produced using various additives chosen according to the final purpose of the product and consumers' requirements. STI

52

Comparative study of isolation and estimation of cholesterol from animal sources.
Mahbub Alam; Ghanzafar Ali Chaudhry
Pakistan Journal of Scientific Research 27 (1-4) 56-58 (1975) [7 ref. En] [Dep. of Pharmacy, Punjab Univ., Lahore, Pakistan]

Cholesterol was isolated and determined in the bile, blood and spinal cord of bullocks, sheep and goats, sheep wool wax and hens' eggs. Tabulated results showed that eggs contained 1.94% cholesterol, or 916 mg cholesterol in 54 g egg. RM

53

Polarographic determination of robenidine residues in chicken tissues, eggs, litter, soil, and plant tissue.
Smith, J. E.; Pascarela, N. R.; Wyckoff, J. C.
Journal of the Association of Official Analytical Chemists 60 (6) 1310-1317 (1977) [12 ref. En] [American Cyanamic Co., Agric. Div., PO Box 400, Princeton, New Jersey 08540, USA]

Polarographic residue methods were developed for determining robenidine (Robenz), 1,3-bis[(p-chlorobenzylidine)amino]-guanidine monohydrochloride, in chicken tissues, eggs, litter, soil and plants. The compound is extracted from chicken fat, skin, muscle, liver and eggs with ethyl acetate. After extraction by high-speed blending or overnight shaking, the extract is cleaned up by evaporation, solvent partition, and/or elution from CG-50 ion exchange resin. Robenidine is quantitated by differential cathode ray polarography, using acidified methanol/water (9:1 v/v) or acetic acid/water (1 + 1) supporting electrolyte. Recoveries ranged from 64 to 125% with an average overall recovery of 90%. The validated sensitivity is 0.1 p.p.m. for chicken tissues, soil, and plants, and 0.01 p.p.m. for eggs. AS

54

[Food of livestock origin as a carrier of pathogenic virus.]
Jovanovic, J.
Tehnologija Mesa **18** (3) 78-81 (1977) [10 ref. Sh]

Fresh and processed meat, milk, butter, eggs and fish are the foods most frequently contaminated by viruses dangerous to human health. Viruses in meat maintain their activity for very long periods, some of them for ⩽200 days after meat refrigeration. Smoking and dehydration do not reduce the activity of the viruses. Temp. of 80° C for 5 min inactivates all kinds of viruses; at 60° C the holding time must be prolonged to 15-30 min. A survey and characteristics of many methods used for detection of viruses in foods are presented. STI

55

[Residues of organochlorine pesticides in poultry meat and eggs in the Netherlands during the period March 1975-March 1976.]
Kan, C. A.; Bouwstra, E.
Voedingsmiddelentechnologie **10** (2) 10-11 (1977) [4 ref. Nl] [Inst. voor Pluimveeonderzoek 'Het Spelderholt', Beekbergen, Netherlands]

A brief account is given of studies on the presence of residues of organochlorine pesticides in eggs and poultry in the period under investigation. All 220 egg samples studied were free from organochlorine pesticide residue concn. exceeding the Netherlands tolerance. In approx. 250 samples of poultry fat, Netherlands tolerances were exceeded only in 3 samples, DDT, aldrin and dieldrin concn. exceeding the tolerance levels in 1 sample each. Residue concn. in both eggs and poultry were, in general, far below the tolerance levels. AJDW

56

[Experience with cleaning and disinfection in Swiss pasta factories.]
Lott, G.
Tecnica Molitoria **28** (11) 128-130 (1977) [2 ref. It]

See FSTA (1977) 9 5M568.

57

[Processing of liquid eggs.]
Madrid Vicente, A.
Alimentaria No. 88, 59-61, 63-64 (1977) [5 ref. Es]

A description, with schematic flow-line, is given of a line (Alfa-Laval) for the pasteurization of liquid eggs, either whole or separated into yolks and white. Product characteristics after pasteurization include (for all 3 forms of egg): density, 1 kg/cm^3; specific heat, 1 kcal/kg °C; and heat conductivity, 0.3 kcal/m h °C. Additionally, the viscosity (cStokes) at 10° and 40° C, resp. was: whole egg, 170 and 20; yolk, 400 and 65; and white, 55 and 8. A variation of the line for the pasteurization of liquid eggs containing additives is described. HBr

58

Dietary zinc as an effective resting agent for the laying hen.
Scott, J. T.
Dissertation Abstracts International, B 37 (12) 5892-5893: Order No. 77-12591, 70pp. (1977) [En] [Texas A&M Univ., College Station, Texas 77843, USA]

During comparison of a conventional moult procedure with the use of dietary Zn as a resting agent, 20 000 p.p.m. Zn (as ZnO) were fed to White Leghorn hens for ⩽16 days. Zn analysis of egg yolk and albumen showed no significant differences from control eggs. DIH

59

[Characteristics and preservation of eggs in the shell.]
Gianninoto, S.; Perillo, G.
Industrie Alimentari **16** (7/8) 113-121 (1977) [12 ref. It]

This review-type article deals with nature and formation of eggs; their morphological characteristics; chemical composition of constituents; the structural composition; the nutritive value and digestibility; changes during storage; preservation of shell eggs; and legal and grading aspects of shell eggs in Italy. SKK

60

[Summary of long-term plan.]
Norway, Selskapet for Landbrukets Naeringsmiddelforskning
NINF Informasjon **5**, 3-13 (1977) [No]

An outline is given of the Norwegian Association for Agricultural Food Research (Selskabet for Landbrukets Naeringsmiddelforskning) plans for 1978-1982 in the sphere of coordination of research, consultancy work and information processing in the branches of the food industry dealing with meat, eggs, vegetables and fruit. Particular emphasis is placed on the role of the Norwegian Institute for Food Research (Norsk Institutt for Naeringsmiddelforskning). HBR

61

[Occurrence of S-methylmethionine in plant and animal products, and its stability during storage.]
Vorkommen von S-Methylmethionin in Pflanzen und in tierischen Produkten und dessen Beständigkeit während der Lagerung.
Kovatscheva[Kovacheva], E. G.; Popova, J.[Ya]. G.
Nahrung **21** (6) 465-472 (1977) [23 ref. De, en, ru] [Food Ind. Univ., Plovdiv, Bulgaria]

S-methylmethionine (vitamin U) was determined in extracts of a total of 53 samples of foods of vegetable and animal origin, including fruit, vegetables, herbs, eggs, dairy products and beef and

veal kidney, liver and brain. Tables of results are given. The richest sources of S-methylmethionine were found to be cabbage (≤ 104 mg/100 g), kohlrabi (≤ 100 mg/100 g), tomatoes (≤ 83 mg/100 g), celery (≤ 78 mg/100 g), leeks (≤ 75 mg/100 g) and radish (≤ 72 mg/100 g). Raw cows' and ewes' milk contained, resp., 1.60-2.20 and 1.90-2.80 mg S-methylmethionine/100 g DM; other dairy products contained traces of S-methylmethionine. Eggs and offal were devoid of this compound. Studies were also conducted on retention of S-methylmethionine by vegetables during storage. After 6 months' storage, % losses were: celery 38; kohlrabi 39; radish 43; leek 32. Cabbage samples stored for 3 months under fluctuating temp. showed losses of 62%, vs. 34% for cold-stored samples. AJDW

62

Trends in foodborne salmonellosis outbreaks: 1963-1975.

Cohen, M. L.; Blake, P. A.

Journal of Food Protection 40 (11) 798-800 (1977) [9 ref. En] [Bacterial Diseases Div., Bureau of Epidemiology, Cent. for Disease Control, Public Health Service, US Dep. of Health, Education & Welfare, Atlanta, Georgia 30333, USA]

Since 1963, 651 outbreaks of human salmonellosis have been reported to the Center for Disease Control. The vehicle of transmission was identified in 463 (71%) of the reported outbreaks. The 3 most important vehicles were poultry, meat, and eggs, which accounted for 99 (21%), 69 (15%), and 53 (11%) of the outbreaks, resp. Egg-associated outbreaks decreased markedly during the study period while meat-associated outbreaks (particularly beef) gradually increased and poultry-associated outbreaks showed no constant trend. AS

63

[Egg carton.]

Petersen, J. N. (A/S BrodrenerHartmann)

Danish Patent Application 136 210 (1977) [Da]

Eggs of different height and diam. are accommodated by providing the projecting tubular-conical portions which separate the eggs in the bottom part of an egg box with slits which extend from the free edges of the projecting tubes downwards into the egg-receiving pockets to provide additional cushioning. W&Co

64

Effect of different combinations of tuna fishmeal, meat meal with bone, and soybean meal upon the laying intensity, egg quality, and feed utilization by hens.

Rojas-Daporta, M.; Soldevila, M.; Gonzales, L. L.

Journal of Agriculture of the University of Puerto Rico 60 (4) 626-630 (1976) [9 ref. En, es] [Agric. Exp. Sta., Mayaguez Campus, Univ. of Puerto Rico, Rio Piedras, Puerto Rico]

Leghorn hens were fed diets containing (i) 9% soybean meal (SM) + 6% tuna meal (TM) + 3% meat meal (MM), (ii) 9% SM + 9% TM, (iii) 9% SM + 3% TM + 6% MM and (iv) 9% SM + 9% MM, and the effects on egg quality were evaluated. Results show that egg wt. was reduced from 25.8 oz (control) to 23.7 oz for (iv); however, sensory evaluation of odour and flavour of eggs showed that none of the diets had any effect on these sensory properties. SP

65

Influence of tuna fish oil on palatability and odor of eggs.

Soldevila, M.; Rojas-Daporta, M.; Huyke de Irizarry, A. G.

Journal of Agriculture of the University of Puerto Rico 60 (4) 675-676 (1976) [En]

Hens were fed diets containing 0, 2, 4 and 6% tuna fish oil. The eggs produced by the hens fed these diets were stored refrigerated for ≥ 7 days and then evaluated by sensory analysis. Results show that no undesirable fishy flavours or odours were detected in 3 out of 4 flavour tests and all 4 odour tests. An off flavour in eggs was detected only for diets containing 6% tuna fish oil. SP

66

Effects of varying day length on egg production traits and patterns of ovipositing in Japanese quail.

Wilhelmson, M.; Uuljedahl, L.-E.

Acta Agriculturae Scandinavica 28 (1) 49-56 (1978) [24 ref. En] [Dep. of Anim. Breeding & Genetics, Swedish Univ. of Agric. Sci., Uppsala, Sweden]

3 groups of quail (28-35 days of age) were kept under light and dark regimes (i) 14 h:10 h, (ii) 13 h:9 h and (iii) 12 h:8 h, resp. Results of egg quality for (i), (ii) and (iii) resp. were: width 2.4, 2.4, and 2.5 cm, length 3.1, 3.1 and 3.1 cm; shape index 78.1, 79.3 and 79.4%; shell thickness 22.0, 21.0 and 22.0 × 10^{-2} mm; and albumen height 3.6, 3.5 and 2.5 mm. Albumen wt. was 5.3 and 5.0 g and yolk wt. 3.0 and 3.0 g for (i) and (ii), resp.; no results are given for (iii). SP

67

The nutritive value of egg protein as determined by the nitrogen balance index (NBI).

Navarrete, D. A.; Loureiro de Daqui, V. A.; Elias, L. G.; Lachance, P. A.; Bressani, R.

Nutrition Reports International 16 (6) 813-820 (1977) [5 ref. En] [Div. of Agric. & Food Sci., Inst. of Nutr. of Cent. America & Panama, PO Box 1188, Guatemala City, Guatemala]

A rapid method for evaluating protein quality in humans was tested using whole egg. The technique applied was an adaptation of the N balance index assay. This short-time experimental method takes only 10-12 days during which small daily increments of the protein under test are fed, while a min. of 24 days is required by the conventional procedure. N balances were run on young adult

men receiving different protein levels with an adequate and constant calorie intake. The relation between N retained and N absorbed was used to determine the quality of the protein. The short N balance index test gave an average value of 0.67, while the conventional method rendered a value of 0.57. These values are not statistically different and are similar to those reported by other laboratories. AS

68

Heritability of the proportion of solids in egg albumen and its relation to egg weight and albumen height.
Sorensen, P.; Ambrosen, T.
Acta Agriculturae Scandinavica **28** (1) 3-9 (1978) [16 ref. En] [Nat. Inst. of Anim. Sci., DK-1958 Copenhagen V, Denmark]

The quality of eggs from hens of 2 strains was measured. Results from the hens selected in the second generation for high egg wt. (strain EW) and a high number of eggs until the age of 42 wk (strain NE) show resp., egg wt. 67.4 and 61.7 g, solids in albumen 11.22 and 10.84%, and albumen height 5.96 and 6.18 mm. Results from unselected hens in the third generation for strains NE and EW resp., were egg wt. 54.2 and 57.9 g, solids in albumen 12.38 and 12.47% and albumen height 7.09 and 6.79 mm after 32 wk, and egg wt. 56.9 and 61.1 g, and albumen height 7.05 and 6.82 mm after 40 wk. SP

69

Nondestructive quality evaluation of agricultural products - industrial application. [Lecture]
Marion, J. E.; Ayres, J. L.; Steele, B.
Journal of Food Protection **41** (1) 54-56 (1978) [15 ref. En] [Gold Kist Res. Cent., Lithonia, Georgia 30058, USA]

Use of nondestructive quality evaluation techniques for agricultural products is steadily increasing. Reasons for increased application and refinements of techniques in processing of agricultural products are discussed, especially with regard to more automation and less labour in processing, increased processing rates, and demand for higher quality and more uniformity of product. Information is presented on a number of nondestructive techniques presently being used, and the need for additional development is covered. Special emphasis is given to the efficiency, practicality, and economic feasibility of various techniques. Agricultural products covered include peanuts, pecans, poultry, eggs, pork and seeds. Nondestructive techniques discussed that are used for processing these commodities into uniform, high-quality products include visual examination, weighing, screening, gravity sorting, air classification, electronic sorting and estimation of chemical composition. A more detailed discussion of electronic colour sorting of peanuts, pecans and almonds is presented, particularly in relation to aflatoxin sampling and reduction, preparing for further processing, and evaluating commercial sorters for speed and accuracy. [See FSTA (1978) 10 7A393.] AS

70

[Method of cleaning eggs.]
Emel'yanov, B. V.; Krivopishin, I. P.; Abdymalikova, B. K.; Sergeeva, A. M.; Demin, O. I.; Nazarov, E. A.; Dudnitskii, I. A. **(Union of Soviet Socialist Republics,** Vsesoyuznyi Nauchno-issledovatel'skii i Tekhnologicheskii Institut Ptitsevodstva)
USSR Patent 579 969 (1977) [Ru]

To reduce bacterial contamination, eggs are washed with an aqueous solution of detergent comprising a fatty acid derivative of general formula $(C_{16}H_{32}CONH(CH_2CH_2O)_5)(CO(NH_2)_2)_{21} \times (H_2O_2)_{12}$. Treatment is preferably at 23-35°C for 5-10 min. The method can also be used to improve hatching results. W&Co

71

Rapid, large-scale purification of crude egg phospholipids using radially compressed silica gel columns.
Patel, K. M.; Sparrow, J. T.
Journal of Chromatography **150** (2) 542-547 (1978) [9 ref. En] [Div. of Atherosclerosis & Lipoprotein Res., Dep. of Med., Baylor Coll. of Med., Houston, Texas 77030, USA]

The purification can be carried out stepwise by equilibrating the column first with chloroform-methanol-water (60:30:2) and injecting the crude egg phosphatidylcholine. After the neutral lipids and phosphatidylethanolamine are eluted, switching to 60:30:4 solvent elutes the phosphatidylcholine. The procedure provides a rapid and simplified method for obtaining chromatographically pure phospholipids for further studies or for conversion into intermediates for synthesis. AL

72

[Studies on the protein and amino acid metabolism of laying hens fed ^{15}N-labelled casein. VII. Incorporation and distribution of labelled N in egg fractions.] Untersuchungen zum Protein- und Aminosäurenstoffwechsel der Legehennen mit ^{15}N-markiertem Kasein. VII. Einbau und Verteilung des markierten Stickstoffes in die Eifraktionen.
Gruhn, K.; Richter, G.
Archiv für Tierernährung **27** (2) 145-160 (1977) [23 ref. De, en, ru] [Sektion Tierproduktion & Veterinärmed., Karl-Marx-Univ., Leipzig, German Democratic Republic]

This paper includes tables of data for the wt., the total N, DM, crude protein and trichloroacetic acid-soluble N contents and the amino acid compositions of eggs and egg fractions (yolk, albumen and shell). The results of studies on transfer of ^{15}N into egg fractions are also given. AJDW

73

Experimental infection of point-of-lay and in-lay pullets with Salmonella typhimurium.
Brown, D. D.; Brand, T. F.
British Veterinary Journal 134 (2) 92-100 (1978) [25 ref. En] [Min. of Agric., Fisheries & Food, Vet. Lab., Eskgrove, Lasswade, Midlothian, UK]

30 point-of-lay and 27 in-lay specific pathogen free Brown Leghorn pullets were infected orally with 1 ml of a culture of Salmonella typhimurium phage type U223 (the culture containing 10^{10} organisms/ml). Egg samples were collected twice daily; the birds were slaughtered ≤ 19 days after infection. Systemic infection with Salm typhimurium was observed in a large proportion of the birds; however, none of the 257 eggs laid by the infected birds were Salmonella-positive either on the shell or in the egg contents. AJDW

74

The laying performance of hens fed Uniwhite lupin seed and supplementary DL-methionine.
Hughes, R. J.; Orange, K. S.
Australian Journal of Experimental Agriculture and Animal Husbandry 16 (80) 367-371 (1976) [15 ref. En] [Dep. of Agric. & Fisheries, Parafield, S. Australia, Australia]

1440 White Leghorn × Australorp hens were used in a study on effects of the Uniwhite lupin seed content of the diet (0, 10% or 20%) and the level of supplementary methionine (sufficient to raise the methionine content of the diet to either 1.23 or 2.0%) on laying performance over a 24 wk period. Data are given for egg grading results and mean egg wt. The results show that the higher methionine level gave significantly higher mean egg. wt.; it also tended to give a higher proportion of eggs in the larger size grades, but differences were not significant. Effects of the lupin seed content of the diet on egg wt. or grading were small, and non-significant. AJDW

75

Controlled feeding of the layer. II. Restriction in time of access to feed of the replacement pullet and laying hen.
Connor, J. K.; Barram, K. M.; Fuelling, D. E.
Australian Journal of Experimental Agriculture and Animal Husbandry 17 (87) 588-597 (1977) [16 ref. En] [Dep. of Primary Ind., Yeerongpilly, Queensland, Australia]

Groups of White Leghorn × Australorp pullets were used in studies on effects of severe feed restriction during the growing and/or laying periods on laying performance, egg wt. and sp. gr. and carcass quality (moisture and fat contents, lean body mass, moisture concn. in the liver) at the time they laid their first egg. Tables of results are given. The results show that egg wt. tended to increase with increasing feed restriction during the growing phase, and with increasing age at lifting of feed restriction. Treatments reducing feed intake below 86% of the ad. lib. level adversely influenced egg wt. In one study, feed restriction and late lifting of feed restriction tended to reduce carcass fat and increase carcass and liver moisture contents; lean body mass of birds subjected to a high level of feed restriction was less than that of birds subjected to a lower degree of feed restriction. [See preceding abstr. for part I.] AJDW

76

Problems associated with the feeding of rations containing rapeseed meal to laying chickens. (In 'Internationaler Rapskongress' [see FSTA (1978) 10 7N322].) [Lecture]
Clandinin, R. R.; Hawrysh, Z.; Howell, J.; Hanson, J. A.; Christian, R. G.; Milne, G.
pp. 463-470 (Undated) [2 ref. En]

Studies on possible relationships between the feeding of rations containing 5-10% rapeseed meal (RSM) to laying hens and the occurrence of liver haemorrhage and 'fishy' eggs suggested a trend for increased mortality and higher incidence of liver haemorrhage with increasing levels of RSM in the diet, though no microscopic abnormalities were detected. Inclusion of 6.8% RSM in the diet had no adverse effects on taste and smell of eggs from Single Comb White Leghorn of White Plymouth Rock hens, but caused the laying of 'fishy' eggs by Rhode Island Reds. The adverse effect was increased by inclusion of myrosinase (as ground raw rapeseed) in the diet. 'Fishiness' was more readily detected by smell than by taste in both raw and scrambled eggs. RM

77

Layer performance in colony cages as related to stocking density and population size.
Hill, A. T.
Canadian Journal of Animal Science 57 (4) 785-792 (1977) [6 ref. En, fr] [Res. Sta., Agric. Canada, Agassiz, British Columbia V0M 1A0, Canada]

2 commercial strains of White Leghorns, Babcock 300 and Shaver 288, were held in populations of (i) 18, (ii) 24, and (iii) 30/colony cage, each at densities of (iv) 310, (v) 387 and (vi) 464 cm^2/bird. As a control (vii) 24 birds were caged singly at 619 cm^2/bird. Results of effects on egg quality were for (i), (ii), (iii), (vi), (v), (vi) and (vii), resp.; dry shell thickness (mm × 1000), 374, 378, 378, 380, 374, 375 and 357; sp. gr. (10^{-3} + 1), 82, 83, 83, 83, 82, 83 and 79; % cracked eggs, 0.48, 0.48, 0.58, 0.48, 0.59, 0.50 and 0.76; % soft shelled and broken eggs, 1.12, 1.16, 1.09, 1.08, 1.09, 1.20 and 2.31; Haugh units, 76.9, 78.2, 76.0, 77.2, 76.4, 77.5 and 76.4; egg wt. 62.2, 61.2, 62.1, 62.0, 61.5 and 60.8; and % Grade A eggs 81.2, 82.8, 83.0, 81.7, 82.9, 82.5 and 85.7. Significant strain differences existed for a number of traits. Only in the case of Haugh units were there significant population differences. None was found for density. SP

78

Protein binding ability correlates with cellular osmolarity.
Low, P. S.; Hoffmann, K. H.; Swezey, R.; Somero, G. N.
Experientia 34 (3) 314-315 (1978) [12 ref. En] [Dep. of Chem., Purdue Univ., W. Lafayette, Indiana 47907, USA]

Soluble protein fractions from a variety of organisms were lyophilized, and the water binding activity was determined at a number of R.H. Values determined for water adsorption for lyophilized soluble muscle proteins are (50% RH; g H_2O/100 g): lobster 12.1, brine shrimp 10.7, rainbow trout 11.0 and crayfish 9.7; corresponding value for egg albumin is 10.3. The values correlate well with published values for cellular osmolarity. DIH

79

[Analysis of eggs and poultry meat for chlorinated hydrocarbons, arsenic and for residues of lead, cadmium and mercury.] Rückstanduntersuchungen auf chlorierte Kohlenwasserstoffe und Umweltchemikalien an Eiern und Geflügelfleisch.
Dorn, P.; Knöppler, H. O.
Berliner und Münchener Tierärztliche Wochenschrift 90 (7) 137-140 (1977) [24 ref. De, en] [Tiergesundheitsdienst Bayern, 8011 Grub, Post Poing, Federal Republic of Germany]

2 and 1 of 970 egg samples analysed contained, resp., chlorinated hydrocarbon (CHC) and heptachlorepoxide levels above the legal maxima of 0.3 and 0.05 mg/kg, resp. 3 of 132 fat samples from boiling hens contained CHC levels >0.5 mg/kg and 2 samples had lindane levels >0.7 mg/kg. Of 970 egg samples and 286 chicken liver samples, 16 and 2 resp. exceeded the permissible As levels of 0.1 and 0.25 mg/kg resp., whilst of 161 egg samples, 15, 31 and 6 exceeded the max. permissible levels of Pb Cd and Hg, resp. EJM

80

Market commentary. Animals and animal products. [Report]
Boswell, A. M.; Pugh, G. E.; McCormick, V.; Lussier, J. G.; Blakely, P. K.; Murray, D. B. (Canada, Agriculture Canada, Economics Branch) 79pp. (1977) [En] Ottawa, Canada

This report contains papers for the Canadian Agricultural Outlook Conference (Ottawa, 12-15 Dec. 1977) on the situation and outlook for hogs, beef, sheep and lambs, poultry and eggs, and the dairy industry in Canada. [See FSTA (1976) 8 7D150 for an earlier report.] AL

81

[Experimental research into the transmission of bacteria through hens' eggs.] Experimentelle Untersuchungen zur Übertragung von Bakterien über das Hühnerei.
Matthes, S.; Hanschke, J.
Berliner und Münchener Tierärztliche Wochenschrift 90 (10) 200-203 (1977) [11 ref. De, en] [Forschungsanstalt für Landwirtschaft, Braunschweig-Völkenrode, Federal Republic of Germany]

Results are reported of experiments on the transovarian transmission of various species of pathogenic bacteria via the eggs of 115 laying hens. Whilst no transmission of Listeria monocytogenes or Pseudomonas aeruginosa could be demonstrated, evidence of Staphylococcus aureus and Pasteurella haemolytica transmission via eggs was obtained. The chances of Salmonella typhimurium transmission via the eggs were considered very small, none of 1013 eggs laid by infected hens containing the organism although the egg shells were infected in 10 cases. EJM

82

The cracking of eggs in relation to cage design and egg grading methods.
Armstrong, W. A.
Dissertation Abstracts International, C 37 (3) 654 (1977) [En] [Queens Univ. of Belfast, University Road, Belfast, UK]

Apparatus was developed for determining the dynamic and egg rolling characteristics of mild steel, welded mesh, wire floors used in battery cages. Comparison of laboratory and field observations indicated similar trends; the important parameters being wire diam., mesh size and egg collection area shape. Decreasing the wire diam. produced a corresponding reduction in cracked shells. Large mesh sizes reduced the incidence of shell faults whereas a highly significant increase in dirty eggs was observed for mesh sizes $< 20 \times 20$ mm. A horizontal egg collection area also reduced the probability of shell damage. Based on these findings, design modifications to commercial cage units were presented. Fine wire floors had no apparent effect on egg production. From a review on Egg Grading systems 3 non-destructive techniques were selected for examination; Electrified Particle, Acoustic Impact and Closed Circuit Television. Spraying the cracked region with charged chalk particles failed to make it visible whereas the analysis of the acoustic response indicated the presence of a crack provided it was large and the point of impact was within the crack vicinity. Examination of the line scan from the T.V. camera indicated the presence of shell defects but further development in character recognition would be necessary before practical application. AS

83

Time-temperature observations of food and equipment in airline catering operations.
Bryan, F. L.; Seabolt, K. A.; Peterson, R. W.; Roberts, L. M.
Journal of Food Protection 41 (2) 80-92 (1978) [18 ref. En] [Cent. for Disease Control, FDA, Atlanta, Georgia, USA]

Practices used in food preparation for food to be served in aircraft were simulated, and temp. of the foods were recorded continuously. Data are

tabulated for egg, poultry and beef dishes. Foods were prepared in airline kitchens, then transport to the aircraft in refrigerated or heated containers (as appropriate) was simulated, and subsequent aircraft storage and reheating (where necessary) was simulated using equipment of the same type as that used in aircraft. Many foods spent long periods at temp. between 45° and 140° F. Refrigeration with solid CO_2 alone was usually of insufficient capacity to hold food at $\leq 45°$ F; a solid CO_2-activated freon refrigeration system could maintain temp. of $<45°$ F. Some hot-storage transporters did not maintain temp. of $>140°$ F. It was considered that the following foods showed potential for growth of foodborne disease bacteria: scrambled eggs stored in pans at a depth of 5 in and 1-lb 13-oz cuts of roast beef, both stored in roll-in type refrigerators; and cooked chicken thighs stored in a reach-in refrigerator. DIH

84

Accumulation and depletion of some organochlorine pesticides in broiler breeder hens during the second laying cycle.
Kan, C. A.; Jonker-den Rooyen, J. C.
Journal of Agricultural and Food Chemistry 26 (2) 465-470 (1978) [7 ref. En] [Spelderholt Inst. for Poultry Res., Min. of Agric. & Fisheries, Beekbergen, Netherlands]

During the 2nd laying cycle of broiler breeder hens, low levels of organochlorine pesticides (HCB, α-HCH, β-HCH, γ-HCH, heptachlor, p,p'-DDT, and dieldrin) were administered via their feed. Accumulation ratios (levels in product/levels in the feed) were higher than during the 1st laying cycle and ranged for body fat on a fat basis from 25 for β-HCH to 1.8 for α-HCH. In eggs, on a whole egg basis the range was 2.3 for β-HCH to 0.16 for α-HCH, and on a fat basis the figures were 20 for β-HCH to 1.4 for α-HCH. Giving noncontaminated feed during 11 wk resulted only in a drastic decline of α- and γ-HCH residues in eggs abd fat. Correlation coeff. of residues within hens in abdominal, intramuscular, and egg fat were found to be high ($> +0.9$). AS

85

[Sampling, preparation and chemical analysis of meat and meat products as well as eggs and egg products suspected of containing aflatoxin residues.] Probenahme, Aufbereitung und chemisch-analytische Bestimmung bei Fleisch und Fleischerzeugnissen sowie Eiern und Eiprodukten bei Verdacht auf Aflatoxinrückstände. [Review]
Lötsch, R.
Fleischwirtschaft 58 (3) 419-425 (1978) [many ref. De] [Bundesanstalt für Fleischforschung, 8650 Kulmbach, Federal Republic of Germany]

Based on an extensive literature review, the author concludes that aflatoxin residues in meat and egg products are too rare to justify their inclusion in food inspection analysis. However, detn. is advisable in suspect cases, e.g. fermented meat products (e.g. salami, cervellata sausages) may be produced by an undefined fungal flora or subsequently contaminated by toxigenic fungi. Suspected mycotoxicoses in animals can be confirmed by examination of meat, internal organs and eggs. Sampling, sample preparation and aflatoxin detn. methods are described for fermented, cured or fresh meat, eggs, and meat and egg products and summarized in tables of 7 methods, 5 have a sensitivity of 0.1 parts/billion and 1 [Brown et al. 1973, Journal of the Association of Official Analytical chemists 56, 1437-1439] of 0.05 parts/billion. RM

86

[Preparation of spheroidal protein-containing formed bodies.] Untersuchungen zur Herstellung von kugelförmigen Proteinformgebilden.
Schmandke, H.; Muschiolik, G.
Nahrung 21 (10) 893-896 (1977) [3 ref. De, en, ru] [Zentralinst. für Ernährung, Potsdam-Rehbrücke, German Democratic Republic]

Aqueous protein mixtures containing vital wheat gluten, bovine blood plasma and egg protein were dropped into sunflower oil at 110°C, the drops thereby forming firm spherical bodies. Studies were conducted on the viscosity and drop-forming capacity of the protein mixtures, thermal setting of the product, and effects of constituents on formation of spherical bodies. Bovine blood plasma promotes formation of spherical bodies; bovine blood plasma and egg protein improve setting during brief heat treatment. Vital gluten increases firmness after more prolonged heat treatment. This process permits preparation of spherical protein bodies of predetermined texture, e.g. simulated fish roe, or aroma-carriers for use in soups. IN

87

[Densitometric method for determination of α-tocopherol using TLC.]
Wieladek, H.; Smoczkiewiczowa, A.
Zeszyty Naukowe, Akademia Ekonomiczna w Poznaniu Seria I Prace z Zakresu Towaroznawstwa i Chemii No. 69, 54-58 (1976) [3 ref. Pl, ru, en]

The detn. is made using Vitatron TLD-100; the method involves the plotting of a calibration curve, which can be used to determine the vitamin E content of hens' eggs and poultry feed. STI

88

Energy and protein requirements of laying hens.
Summers, J. D.; Leeson, S.
Nutrition Reports International 17 (1) 87-91 (1978) [4 ref. En] [Dep. of Animal and Poultry Sci., Univ. of Guelph, Guelph, Ontario, Canada]

Two commercial strains of Single Comb White Leghorn pullets, were offered diets containing 17.8% calcium phosphate and either (i) 3.08, (ii) 2.86, (iii) 2.64 or (iv) 2.42 kcal metabolizable energy/kg. Results show average egg wt. (g) were 57.3, 56.4, 56.6 and 56.3 for (i)-(iv) resp. The lighter wt. breed had an average egg wt. of 55.4 g vs. 57.9 g for the heavier breed. SP

89

Effects of ochratoxin A on production characteristics and hatchability of Japanese quail.
Prior, M. G.; O'Neil, J. B.; Sisodia, C. S.
Canadian Journal of Animal Science 58 (1) 29-33 (1978) [10 ref. En, fr] [Anim. Path. Div., Agric. Canada, 116 Veterinary Road, Saskatoon, Saskatchewan S7N 2R3, Canada]

5 experiments testing the response of Japanese quail to graded doses of ochratoxin A (OA) were conducted. Levels in the feed ≤ 16 p.p.m. had no adverse effect on egg production or egg wt. when measured over a 5- or 6-wk period. An examination of these production characteristics on a weekly basis indicated a significant depression ($P < 0.05$) during the 3rd wk on egg wt. at 4, 8 and 16 p.p.m. OA. Egg wt. of the group receiving 16 p.p.m. was significantly depressed ($P < 0.05$) during the wk following either the introduction or the removal of males. AS

90

Utilization of whole Tower rapeseed by laying hens and broiler chickens.
Leeson, S.; Slinger, S. J.; Summers, J. D.
Canadian Journal of Animal Science 58 (1) 55-61 (1978) [11 ref. En, fr] [Dep. of Anim. & Poultry Sci., Univ. of Guelph, Guelph, Ontario N1G 2W1, Canada]

Feeding trials were carried out on (i) White Leghorn strain laying birds and (ii) male, day old broiler chicks of a commercial strain, to study the effects of Tower rapeseed on egg quality for (i) and carcass quality for (ii). (i) were fed a control diet with or without 10% unheated, autoclaved or autoclaved and ground Tower rapeseed. (ii) were fed control diets with or without 10% or 20% unheated, dry-heated, or autoclaved Tower rapeseed. Results for (i) were egg wt. 62.2, 60.0, 60.3 and 60.4 g and egg shell deformation (μm) 23.3, 23.2, 22.9 and 21.9 for control, unheated, autoclaved, and autoclaved and ground Tower rapeseed, resp. Results for (ii) were chilled carcass wt. 1180, 1145 and 1122 g, and carcass grading (for grades A and B): (%) conformation 65.7, 67.7, and 73.5 (A), 34.3, 26.4 and 17.6 (B); fleshing 5.7, 8.8, and 5.9 (A), 65.7, 58.7, and 61.7 (B); breast finish 8.6, 0.0 and 0.0 (A), 82.8, 85.7 and 34.2 (B); and back finish 2.9, 0.0 and 0.0 (A), 88.6, 67.6 and 34.4 (B) for control diet, 10%, and 20% unheated Tower rapeseed, resp. SP

91

Transmission of aflatoxins into eggs and egg products. [Lecture]
Lötzsch, R.; Leistner, L.
Annales de la Nutrition et de l'Alimentation 31 (4/5/6) 499-508 (1977) [many ref. En] [Bundesanstalt für Fleischforschung, 8650 Kulmbach, Federal Republic of Germany]

Pending enactment of Federal German legislation on aflatoxin tolerances in food, Japanese quail and white and brown laying hens (HNL type) were fed continuously with rations containing 40-10 000 parts/billion (p.p.b.) aflatoxin B_1 and 30-13 000 p.p.b. G_1 for 30, 56 and 28 days, resp. Measurable amounts of B_1 toxin were detected in quail eggs at a 100 p.p.b. feeding level, in white hens' eggs at 3000 p.p.b. and in brown hens' eggs at 5000 p.p.b.; max. concn. recovered were 2.5, 0.4 and 0.2 p.p.b. resp. in whole eggs, with slightly higher concn. in yolks than in whites. G_1 toxin was detected in hens' eggs at a feeding level of 1550 p.p.b., with max. concn. of 0.2 and 0.05 p.p.b. in white and brown hens' eggs resp. Egg production by all fowls fed continuously at 10 000 p.p.b. aflatoxin B_1 ceased after a few days thus excluding hazardous residues in eggs, but a single high oral dose of 1.86 mg B_1 toxin/kg body wt. produced residues in eggs up to 7 days after treatment, with a max. concn. of 1.24 p.p.b. Regarding tolerances, quail and hens' eggs present no potential public health hazard. [See FSTA (1978) 10 9C297.] RM

92

Influence of dry rum distillery slops in diets for White Leghorn hens on laying rate, feed conversion, and egg size and quality.
Soldevila, M.; Irizarry, R.
Journal of Agriculture of the University of Puerto Rico 61 (4) 465-469 (1977) [10 ref. En, es] [Lajas Substa., Mayaguez Campus, Univ. of Puerto Rico, Rio Piedras, Puerto Rico]

Effects of inclusion of dry rum distillery slops for 12 wk, at 0, 5, 10, 15, 20, 25, 30 and 35% level in diets of Leghorn hens of the Kimber strain, individually fed and housed, were evaluated. Results were for 0, 5, 10, 15, 20, 25, 30 and 35% dry slops resp., egg wt. (% of the 56.75 g standard) at 1st month 86.0, 86.4, 83.0, 83.8, 82.6, 84.1, 78.8, and 84.4, at end of study, 106.2, 107.4, 101.6, 98.2, 98.6, 101.8, 94.2 and 98.1; shell thickness, 0.036, 0.038, 0.036, 0.038, 0.036, 0.036, 0.033 and 0.033 cm; and broken-open egg height (mm) 17.8, 18.1, 17.0, 17.5, 15.9, 17.0, 17.1 and 17.3. No significant difference was found between treatments on egg quality parameters studied. SP

93

[Retail hens' eggs for direct consumption.]
Czechoslovakia, Urad pro Normalizaci a Mereni
Czechoslovak Standard CSN 46 6408, 4pp. (1976) [Cs]

General quality requirements for 2 grades of hens' eggs are given, covering colour of shell, characteristics of white and yolk, min. wt., random testing of bulk lots, packaging and storage (5-18° C in well ventilated store). HBr

94

Egg and egg products, frozen.
United States of America, General Services Administration, Federal Supply Service
Federal Specification C-E-230E, 20pp. (1977) [En] [Washington, DC 20406, USA]

The specification, which supersedes C-E-00230D (Army GL) 1973 and C-E-230C, 1970, covers products of the following 2 types, (i) storage prior to delivery is ≤ 180 days from date of production and (ii) product is produced ≤ 90 days prior to date of delivery, and of the following 6 kinds: frozen whole egg, table grade, type (ii); frozen whole eggs; frozen egg white; frozen egg yolk; frozen sugared yolk; and frozen salted yolk. It specifies requirements for materials, processing, physical, analytical and microbiological requirements, quality assurance provisions, sampling and testing, and preparation for delivery. AL

95

Composition and method for safely extending storage life of foods.
Nickerson, J. T. R.; Darack, J. R. (Dirigo Corp.)
United States Patent 4 076 850 (1978) [En]

Bacterial growth in shelled hard cooked eggs, cooked shellfish and cooked mushrooms is inhibited by storage under refrigeration in an aqueous solution containing a mixture of bacterial inhibitors and buffering agent. IFT

96

A technique for evaluating whipping properties of soluble milk protein products.
Goldman, A.; Toepfer, N. G.
XX International Dairy Congress E, 418-419 (1978) [En] [New Zealand Dairy Res. Inst., Palmerston North, New Zealand]

Whipping properties (% overrun and foam stability) of both sugared and unsugared soluble milk protein solutions, fresh and dried egg white were compared using a standard method described. Sodium caseinate and soluble co-precipitate, with or without sugar, gave lower overruns, and soluble whey protein concentrate a higher overrun, than egg albumin. Further whipping after sugar addition increased these differences. Foam stability was greatest in unsugared fresh egg albumin and soluble co-precipitate. All sugared milk protein products exhibited max. stability. [See FSTA (1978) **10** 10P1408.] EJM

97

[Investigating 'Chinese duck eggs'.]
Untersuchungen von 'Chinesischen Enteneiern'.
Tillack, J.; Reusse, V.
Fleischwirtschaft 58 (2) 271-273; 240 (1978) [8 ref. De, en] [Veterinäruntersuchungsanstalt, Lagerstrasse 36, 2000 Hamburg 6, Federal Republic of Germany]

61 fermented Chinese duck eggs were subjected to sensory and bacteriological analysis. The shells were surrounded by a layer of hard red earth several mm or cm thick, colour varied from yellow-, red-, greenish-brown to black, and smell was pleasant though slightly ammoniacal. pH of egg white and yolk was 10.0 and 9.5, resp. Bacteriological examination showed no surviving bacteria, and massive injections provoked growth only in 2 obviously spoiled eggs with pH 8.1-8.3. It is proposed to free the product from the mandatory declaration and heating requirements of the regulation for duck eggs and allow imports subject to bacteriological examination. RM

98

[Corrugated board shipping container for eggs.]
Bulgaria. D"rzhaven Komitet za Standartizatsiya
Bulgarian Standard **BDS 6816-77**, 3pp. (1977) [Bg]

99

Health laws and regulations - France.
World Health Organization
International Digest of Health Legislation 28 (4) 959-979 (1977) [En] [Geneva, Switzerland]

A selection of French health laws and regulations is presented including the following which relate to food hygiene. Order of 9 March, 1977, on the use of sorbic acid in confectionery, made in pursuance of, inter alia, Decree No. 72-937 of 12 Oct., 1972. It lays down conditions under which sorbic acid or its Ca, Na, or K salts may be added to various types of confectionery and requires that the presence of sorbic acid or its salts must be made evident to the purchaser; Order of 10 March, 1977, on the state of health and hygiene of personnel required to handle animal foodstuffs and foodstuffs of animal origin. It prescribes groups of persons liable to contaminate animal foodstuffs or foodstuffs of animal origin and requires that all persons employed to handle the foods referred to must undergo certain examinations prior to employment; Order of 8 July, 1977, on egg products intended for human consumption, lays down detailed provisions concerning conditions for the preparation, storage and health inspection of liquid, frozen or dried egg products intended for human consumption. Annex I lays down criteria of bacteriological quality for egg products; Order of 18 July, 1977, on the hygienic preparation of cut-up meat and cut-up boned meat, lays down detailed provisions concerning conditions for the preparation, marketing and health inspection of cut-up, boned or unboned meat and offal from cattle, pigs, goats and horses; and Order of 20 July, 1977, for the implementation of the Decree of 24 Jan., 1975, which prescribes the requirements governing various categories of foods for special dietary uses. VJG

100

[Alteration of the meat regulation and the egg product regulation.] Änderung der Fleisch-Verordnung und der Eiprodukte-Verordnung.
Germany, Federal Republic of. Bundesminister für Jugend, Familie und Gesundheit
Zeitschrift für Lebensmittel-Untersuchung und -Forschung 166 (5, Beilage) 195-201 (1978) [De]

5 articles of a regulation made on 20 Dec. 1977 give details of alterations made to the meat regulation and the egg product regulation. The

changes to the meat regulation relate to allowed curing and smoking additives, and permitted ingredients in meat products; the new form of the regulation took effect from 1 Jan. 1978. An appendix lists permitted additives, their EEC E-number, conditions of use, max. permitted quantities and any necessary declaration. Alterations to the egg product regulation relate to use of additives in pretreatment of egg white by heating and conditions on commercial use of such treated products. The new form of the regulation took effect from 1 April 1978. DIH

101

[Use of drugs in poultry production and residues in eggs and meat.] Arzneimitteleinsatz in der Geflügelproduktion und Rückstände im Ei and Geflügelfleisch. [Review]
Fleischle, W.
Berichte über Landwirtschaft 55 (4) 855-864 (1977, publ. 1978) [85 ref. De, en, fr] [Inst. für Tiermed. & Tierhygiene, Univ. Hohenheim, Postfach 106/06200, 7000 Stuttgart 70, Federal Republic of Germany]

Use of drugs in poultry production, legal aspects of their use, and detection methods are considered in the 1st part of this review, and 8 classes of drugs used in poultry production are listed, with ref. for legal aspects and detection methods. The 2nd part considers the problem of residues in eggs and poultry meat; 38 drugs are listed with ref. relevant to the presence of each in eggs or meat. Presence of residues in eggs is considered of greater concern than in poultry meat, as egg consumption is higher; results show that levels of residues are as high or higher than those in meat. Official examination of eggs for residues is recommended. DIH

102

[Effect of age of bird on the keeping characteristics of commercial eggs.]
Rudavskaya, A. B.; Shkarupa, V. F.
Tovarovedenie 10, 43-46 (1977) [7 ref. Ru]

Eggs laid by White Leghorn hens (aged 6, 8, 10, 12, 14, 16, or 18 months and reared under identical conditions) were stored at 15-18° C and 78-83% RH or at -1° to +1° C and 87-95% RH, and analysed by ovoscopy after 10, 39, 80 and 90 days' storage. The analyses covered overall quality (grading), numbers failing to achieve the grade (i.e. unsuitable for food use), and wt. loss. Under both storage conditions, best results were obtained with eggs laid by hens aged 12-16 months. KME

103

[Studies on the recycling of animal wastes. V. Studies on the nutritive values of dried poultry wastes and dried pig manure in layer rations.]
Yoo, M. I.; Chung, C. Y.; Han, I. K.
Korean Journal of Animal Science 19 (5) 380-384 (1977) [9 ref. Ko, en] [Livestock Exp. Sta., Suweon, Korea]

336 hens were fed diets containing 5, 10 or 15% dried hen or pig manure to partially replace wheat bran and corn, for 12 wk. Effects on egg quality were studied. Results of analysis of egg quality were, for control, 5, 10 and 15% hen manure and 5, 10 and 15% pig manure resp.: egg yolk colour, 6.84, 6.62, 6.88, 6.86, 6.64, 6.46 and 5.98; Haugh units, 84.70, 82.62, 84.66, 8462, 83.86, 85.24, and 84.38; and shell thickness (mm), 0.3588, 0.3610, 0.3592, 0.3594, 0.3432, 0.3532 and 0.3556. The only significant effect of inclusion of hen or pig manure was that the egg yolk colour value of hens fed 15% pig manure was significantly lower ($P < 0.05$) than for control and all other treatments. [From En summ.] SP

104

[Effect of feed additives on the fatty acid composition of eggs.]
Tylkin, V. B.; Rudavskaya, A. B.; Svidovskii, A. N.
Tovarovedenie 10, 40-43 (1977) [6 ref. Ru]

In experiments carried out in Kiev in 1974-1975, the diet of 9 matched groups of White Leghorn hens was supplemented with fat thus: (i) 4% beef fat, (ii) 7% beef fat, (iii) 4% sunflower seed (SS) oil, (iv) 7% SS oil, (v) 2% beef fat + 2% SS oil, (vi) 4% SS phosphatides, (vii) 2% beef fat + 2% SS phosphatides, and (viii) 4% fish oil. Group (ix) had no supplement (control). 10 eggs from each group were analysed for contents of palmitic, stearic, oleic, linoleic and arachidonic acids, unsaturated and saturated fatty acids, and for I value. Diets (i)-(viii) all led to a decrease in contents of palmitic acid and an increase in arachidonic acid compared with the control; diets (i) and (ii) led to an increase in the stearic acid content; and (iv) caused a reduction in oleic acid. Diets (i) and (ii) caused a reduction in linoleic acid, (viii) caused no change, but all the other fats, especially (iv), produced an increase in linoleic acid concn. SS oil and SS phosphatides caused a marked improvement in the fatty acid composition of the egg lipids. Use of fat supplements of vegetable origin is recommended for feeding laying hens. KME

105

Copper deficiency in the laying hen.
Baumgartner, S.; Brown, D. J.; Salevsky, E., Jr.; Leach, R. M., Jr.
Journal of Nutrition 108 (5) 804-811 (1978) [26 ref. En] [Dep. of Poultry Sci., Pennsylvania State Univ., University Park, Pennsylvania 16802, USA]

'Kimber 137' strain Single Comb White Leghorn hens were used in a study on effects of (i) a low-Cu basal diet (containing 0.72 μg Cu/g) or (ii) the basal diet supplemented with 25 μg Cu/g, on egg characteristics. Mean values for characteristics of eggs laid by hens receiving (i) and (ii) were, resp.: shell-less eggs 10.1 and 0.4%; malformed eggs 40.6 and 0%; egg wt. 67.8 and 62.4 g; shell wt. 5.59 and 5.77 g; and shell 'thickness' 73.79 and 80.64 mg/cm^2. Abnormalities of shell membrane colour, consistency, appearance and permeability were

observed in eggs laid by (i) hens; shell structure was also abnormal. AJDW

106

[A study on the UGF effect of pine pollen for broiler and laying hen.]

Kang, T. H.; Choe, P. I.; Jeong, Y. H.

Korean Journal of Animal Science 19 (5) 385-388 (1977) [13 ref. Ko, en] [Yesan Nat. Agric. Junior Coll., Yesan, Korea]

108 broilers (Shaver Starbro) and 36 laying hens (Hisex) were fed diets containing 1, 3 or 6% sun dried pine pollen for 4 wk. Results show average egg wt. for the last wk of experiment were for birds fed control, 1, 3 or 6% pine pollen, resp. 56.0, 58.4, 60.3 and 61.0 g [From En summ.] SP

107

[Review of French research on egg quality.]

[Review]

Sauveur, B.

Cahiers de Nutrition et de Dietetique 13 (1) 35-46 (1978) [70 ref. Fr, en] [Sta. de Recherches, INRA, 37380 Nouzilly, France]

Research in progress in France on quality characteristics of eggs is reviewed. The diet of laying birds affects egg wt., the yolk:white ratio, detailed composition and vitamin content. Lipids in the diet are built up directly into the yolk and strongly influence the contents of individual fatty acids, but not of cholesterol. A poor protein diet (particularly deficiency of lysine and methionine) reduces the protein and vitamin contents of eggs by reducing the albumen wt. and increasing water content. Egg wt. increases with increasing age of bird; yolk tends to be approx. 1.5% higher in brown shell eggs. Shell colour is entirely genetic and not affected by feeding or management. Extensive comparisons between free range and battery-type egg production have revealed no significant differences in composition; bacteriological quality is inferior with free range. Although major constituents and vitamins are essentially stable during storage, transfers occur between white and yolk in both directions which affect functional properties. Shell breakage (a major problem responsible for 8% of marketing losses) has led to extensive studies of acid-base and Ca metabolism of shell formation. The deterioration of albumen quality during storage producing increased thin vs. thick white has been traced to loss of CO_2 from the newly-laid egg, resulting in a pH rise and interactions between acid and basic proteins. Storage at 10° C in an atmosphere containing 4% CO_2 is advantageous. Studies of whipping and emulsification properties are also mentioned. ELC

108

Genetic studies of egg quality of different breeds and crosses in the subtropics.

Stino, F. K. R.; Kicka, M. A. M.; Kamar, G. A. R.

Egyptian Journal of Animal Production 17 (1) 47-53 (1977) [10 ref. En, ar] [Dep. of Anim. Production, Fac. of Agric., Cairo Univ., Giza, Egypt]

Studies were conducted on the quality of eggs laid by Rhode Island Red (R) Baladi (B), Fayoumi (F), R × B, R × F, B × R, F × R, F × B, and B × F hens; tables of results are given. The results show that B, F × B and B × F had the highest and R, F × R and R × F the lowest % yolk; R, F × R and R × F had the highest and F, B, F × B and B × F the lowest % albumen. B, F, F × B and B × F had higher % shell than the other groups. Shape index was highest for R and lowest for B, with F and crossbreds being intermediate. B × F, B × R and F × R had the highest and R, R × B and R × F had the lowest % shell thickness. F, F × B, B × F and F × R had the highest and R the lowest sp. gr. Yolk shape index did not differ significantly between hen breeds. F × R had the highest and B and F × B the lowest Haugh score. B had the most intense yolk colour, followed by F × B and R × B. AJDW

109

The effect of egg laying cycle on egg components.

Kamar, G. A. R.; Kheiralla, M. A.; Ali, M.; Darwish, A.

Egyptian Journal of Animal Production 14 (2) 265-279 (1974) [9 ref. En, ar] [Anim. Production Dep., Fac. of Agric., Cairo Univ., Giza, Egypt]

16 Fayoumi (F) and 13 White Plymouth Rock (WPR) pullets were used in a study on effect of breed, season of the year and position of the egg within the clutch on egg quality (egg wt., and the wt. and % of the yolk, albumen and shell). Detailed tables of results are given. WPR eggs were heavier than F eggs, the first egg in a clutch tended to be heavier than subsequent eggs. Egg wt. increased during winter and spring, and decreased during summer. Albumen and yolk wt. decreased with advancement of egg position in the clutch; albumen % decreased and yolk % increased with advancement of position in the clutch. F eggs had higher % yolk and shell than WPR eggs. In 2-egg cycles, the first egg had a thicker shell and a higher wt. and % shell than the second egg; in multi-egg cycles, the first and last eggs had thicker shells and higher wt. and % shell than the intermediate eggs. AJDW

110

Quality of eggs handled and stored by different methods.

Afifi, Y.; Ali Obeidah; Kamar, G. A. R.

Egyptian Journal of Animal Production 15 (2) 197-208 (1975) [25 ref. En, ar] [Anim. Breeding Dep., Fac. of Agric., Cairo Univ., Giza, Egypt]

Eggs laid by (i), White Leghorn, (ii), Rhode Island Red, (iii), (i) × (ii) and (iv), (ii) × (i) hens were used in a study on effects of hen breed, storage time (1, 4, 7, 14, or 21 days), storage temp. (5-9° C or 20° C) and packaging (cartons containing 360 eggs on trays, or no packaging) on quality. Tables of data are given for the egg wt., yolk wt., albumen vol., % thick albumen, thick albumen vol. in relation to egg wt., albumen height, yolk height, shape index, air cell vol., and the thickness,

breaking strength and deformation value of the egg shell. Significant differences between (i), (ii), (iii) and (iv) were observed for yolk wt., % thick albumen, albumen height, yolk height, air cell vol., and egg sp. gr. Storage time significantly influenced all the characteristics studied, except yolk wt. and the shell characteristics. Storage temp. significantly influenced yolk wt., % thick albumen, thick albumen vol. in relation to egg wt., shape index, sp. gr., and shell thickness and breaking strength. Packaging significantly influenced all characteristics studied except % thick albumen, thick albumen vol. in relation to egg wt., shape index, and deformation value and thickness of egg shell. Correlations between egg quality characteristics are also presented. AJDW

111

Effect of feeding high levels of cotton-seed meal on egg quality.

El-Abbady, M. R.; El-Kotoury, M. I.; Samy, M. S. M.

Egyptian Journal of Animal Production **15** (2) 155-162 (1975) [22 ref. En, ar] [Fac. of Agric., Cairo Univ., Egypt]

180 Baladi White (BW) and 180 Rhode Island Red (RIR) pullets were used in a study on effects of diets containing 0, 10%, 20% or 30% cottonseed meal (CSM) on egg quality. Decorticated CSM was used for RIR birds, and non-decorticated CSM for the BW groups. The experimental diets were fed for 6 months; egg quality was evaluated at monthly intervals. The results show that: yolks of hens fed 20% or 30% CSM showed slight brown discoloration; no discoloration of the albumen was observed in any sample; yolk discoloration in the NH_3 test was positively correlated with the CSM level in the diet; and dietary treatments had no significant effect on yolk or albumen pH or the calorific value of the eggs. AJDW

112

Thin layer chromatographic determination of aflatoxin B_1 in eggs: collaborative study.

Nesheim, S.; Trucksess, M. W.

Journal of the Association of Official Analytical Chemists **61** (3) 569-573 (1978) [6 ref. En] [FDA, Div. of Chem. & Physics, Washington, DC 20204, USA]

The TLC method of Trucksess et al. [FSTA (1978) **10** 1Q12] for aflatoxin B_1 in eggs was collaboratively studied. Each collaborator analysed 3 known practice samples and 9 unknown samples containing added aflatoxin B_1 at 0, 0.05, 0.10, and 0.30 ng/g. For 9 collaborators, recoveries for the 3 positive levels were: 0-0.13 ng/g (average 98%, coeff. of variation (C.V.) 83%), 0.05-0.18 ng/g (average 102%, C.V. 36%), and 0.11-0.42 ng/g (average 93%, C.V. 31%), resp. The method has been adopted as official first action. AS

113

The effect of crossing chickens on egg characters.

Kamar, G. A. R.; Mostageer, M.; Kotby, S.

Egyptian Journal of Animal Production **14** (2) 169-174 (1974) [12 ref. En, ar] [Anim. Production Dep., Fac. of Agric., Cairo Univ., Giza, Egypt]

Studies were conducted on the quality of eggs laid by purebred Fayoumi (F), White Baladi (WB) and Rhode Island Red (RIR) hens, and F × RIR, RIR × F, WB × RIR and RIR × WB crossbreds. A table of results is given for egg wt., albumen wt., albumen %, yolk wt., yolk %, shell wt., shell %, and shell thickness. F and B had significantly lower egg, albumen and yolk wt. and heavier and thicker shells then RIR; eggs of RIR hens had higher albumen % and lower yolk and shell % than those of F or WB hens. Characteristics of eggs of crossbreds were very similar to those of their dams, suggesting the existance of maternal effects. The F × RIR cross (which gave the largest eggs of the breed groups studied) is recommended. AJDW

114

The relationship between pause and egg laying characters.

Kamar, G. A. R.; Kheireldin, M. A.; Darwish, A.; Ali, M. M.

Egyptian Journal of Animal Production **15** (1) 95-101 (1975) [10 ref. En, ar] [Anim. Production Dep., Fac. of Agric., Cairo Univ., Giza, Egypt]

16 Fayoumi (F) and 13 White Plymouth Rock (WPR) pullets were used in a study on effects of 'pause' duration (temporary cessation of laying) on egg quality. Tables of data are given for egg wt., albumen, yolk and shell wt. and %, shell thickness, Haugh score, yolk index and yolk colour of the first egg laid after the pause. Egg wt. of F decreased with increasing pause length ≤ 5 days, then increased; egg wt. of WPR decreased with increasing pause length over the whole range (≤ 6 days) studied. Albumen % decreased with increasing pause length ≤ 5 days for F and ≤ 4 days for WPR, then increased with further increase in pause length. Yolk % followed an approx. opposite trend in relation to pause length. Shell % of F increased with increasing pause length; no regular trend could be observed for shell % of WPR. Yolk index of eggs of both breeds tended to decrease with increasing pause length ≤ 3 days, then increased. Yolk colour tended to increase for F eggs and to decrease for WPR eggs ≤ 3 days pause, then remained approx. constant. Haugh score increased with increasing pause length in both breeds. Shell thickness of both F and WPR decreased with increasing pause length ≤ 4 days, then remained constant. AJDW

115

Performance of egg-strain birds during their commercial life cycle when continuously fed diets containing Tower rapeseed gums.

Summers, J. D.; Leeson, S.; Slinger, S. J.

Canadian Journal of Animal Science **58** (2) 183-189 (1978) [6 ref. En, fr] [Dep. of Anim. &

Poultry Sci., Univ. of Guelph, Guelph, Ontario, N1G 2W1, Canada]

The long term effect of utilizing rapeseed gums in poultry diet was studied, by continuously feeding this product throughout the life cycle of the laying hen. Treatment consisted of: (i) soybean meal control, (ii) 15% Tower rapeseed meal, (iii) 15% Tower rapeseed + 1.5% rape gum, (iv) soybean meal + 1.5% rape gum, and (v) soybean meal + 1.5% soy gum. The diets were offered to a commercial White Leghorn strain and University Strains of White Leghorns and Rhode Island Red. Results for effects of rapeseed gums on egg production quality for diets (i), (ii), (iii), (iv) and (v) resp., were: egg production (HDB%), 72.8, 72.0, 72.4, 72.8, and 75.2; egg wt., 57.2, 56.2, 56.1, 57.1, and 56.2 g; and egg shell deformation, 23.7, 23.4, 23.2, 24.0 and 23.1 μm. Statistical analysis of the results shows that egg production was significantly higher ($P < 0.05$) for (v) and egg wt. was significantly lower ($P < 0.01$) for (ii), (iii) and (v). Egg shell quality was significantly superior ($P < 0.01$) for (i) and (iv). SP

116

Japanese fowl-rearing and its products. [Thesis; L'elevage et les produits avicoles nippons, 137pp., Fr]
Bonvalet, J.-J.
Dissertation Abstracts International, C 37 (4) 683 (1977) [En] [Univ. de Lyon I, Lyon, France]

Eggs, meats and derived products are discussed with reference to the importance of their production and market characteristics, external trade and national outlets, and the increasing importance of economic exchange with New Zealand and Australia. The long and short term future of the industry is assessed, and new products, methods of presentation and the introduction of new fowl strains are discussed. AS

117

Pasta from bread wheat granular mill streams.
Fernandes, J. L. A.
Dissertation Abstracts International, B 38 (6) 2602; Order No. 77-25613, 117pp. (1977) [En] [North Dakota State Univ., Fargo, N. Dakota 58102, USA]

Using a pilot mill designed for bread flour production, an attempt was made to select granular mill streams for pasta production. Hard red spring, hard red winter and durum wheats of the 1974 and 1975 crop yr were studied. The effect of incorporating whole eggs on spaghetti quality was also examined. The major advantages of incorporating eggs were improvement in spaghetti colour score and overall appearance. All the wheat classes and var. tested could be used as a granular source for egg-spaghetti production, best results being obtained with the intermediate granular mill streams. Egg-spaghetti cooking properties were not affected by degree of grinding but were by protein quantity and quality. JA

118

[Calculation and statistical confirmation of determinations of egg content of pasta.] Berechnung und statistische Absicherung der Eigehaltsbestimmung in Teigwaren.
Toth, L.
Getreide, Mehl und Brot 32 (5) 116-119 (1978) [11 ref. De] [Bundesgesundheitsamt, Max von Pettenkofer Inst., Postfach, 1000 Berlin (West) 33]

Recommendations for detn. of egg content of pasta products, shortly to be proposed by the Federal German Health Office, are discussed. Methods of calculation are described for reporting (in terms of eggs or egg yolks/kg pasta) analytical values for either cholesterol contents from (i) gas chromatographic detn. or total sterol content from (ii) digitonin detn. Statistical treatment of results is discussed; collaborative trials have shown that the reproducibility of (i) detn. is 8.0 mg/100 g DM, and of (ii) is 10.6 mg/100 g DM. Because of variation of egg sterol content the methods can detect non-compliance with regulations governing egg content (e.g. egg noodles) with 95% probability for a difference of (i) 0.5 eggs/kg and (ii) 1.25 eggs/kg. DIH

119

[Studies on the nutritive values of locally produced oil meals. V. Comparison of the nutritive values of locally produced oil meals for egg-type starters.]
Chung, C. S.; Chung, I. K.; Han, I. K.
Korean Journal of Animal Science 20 (1) 90-97 (1978) [34 ref. Ko, en] [Coll. of Agric., Seoul Nat. Univ., Suweon, Korea]

120

[Studies on the nutritive values of locally produced oil meals. VI. Comparison of the nutritive values of locally produced oil meals for egg-type growers.]
Chung, C. S.; Han, I. K.
Korean Journal of Animal Science 20 (1) 98-103 (1978) [7 ref. Ko, en] [Coll. of Agric., Seoul Nat. Univ., Suweon, Korea]

121

[Studies on the nutritive values of locally produced oil meals. VII. Comparison of the nutritive values of locally produced oil meals for laying hens.]
Chung, C. S.; Han, I. K.
Korean Journal of Animal Science 20 (1) 104-111 (1978) [19 ref. Ko, en] [Coll. of Agric., Seoul Nat. Univ., Suweon, Korea]

The nutritive values of locally produced oil meals for laying hens from 21 wk to 46 wk of age were compared. 400 White Leghorn hens were fed (i) soybean oil meal, or (ii) perilla oil meal, (iii) sesame oil meal, (iv) rapeseed oil meal or (v) corn gluten meal as either a partial or a complete substitute for (i). Effects on egg quality were evaluated and results for (i), (ii), (iii), (iv) and (v) resp. fed as a partial substitute were: average egg wt., 58.1, 57.6, 56.8, 56.7 and 57.8; % shell-less

eggs, 0.82, 0.98, 1.12, 1.02 and 0.74; egg shell thickness, 35.1; 35.0, 35.6, 34.6 and 35.3 (units not stated); and egg yolk colour, 11.1, 11.2, 11.1, 10.9 and 11.5 (units not stated). Results for (i), (ii), (iii) (iv) and (v) fed as full substitutes resp. were: 57.7, 57.1, 55.2, 56.7 and 56.4 g; 0.65, 0.87, 1.37, 1.63 and 0.91%; 35.4, 35.8, 36.2, 35.1 and 36.6; and 11.0, 11.1, 11.0, 11.0 and 11.5. It was concluded from the results that the nutritive values of locally produced oil meals were improved when they were used in combination with soybean oil meal. [From En summ.] SP

122

[Studies on the nutritive values of locally produced oil meals. VIII. Studies on the detoxification of castor bean meal.]
Lee, K. H.; Han, I. K.; Chung, C. Y.; Chung, U. I.
Korean Journal of Animal Science **20** (2) 139-146 (1978) [20 ref. Ko, en] [Coll. of Agric., Seoul Nat. Univ., Suweon, Korea]

123

[Egg condition after ultraciolet irradiation of hens.]
Faitel'berg-Blank, V. R.; Dygas, A. T.; Chan Kao Dyong
Vestnik Sel'skokhozyaistvennoi Nauki, Moscow, USSR No. 5, 65-68 (1978) [17 ref. Ru, en, de, fr] [Odesskii Sel'skokhoz. Inst., Odessa, USSR]

530 Katman-line hens were divided into 3 matched groups, (i) not irradiated, (ii) irradiated by a UV lamp at 66 mer [Merg ?]/h m^2, and (iii) semilarly irradiated at 330 mer/h m^2 each morning during April-May. The ration contained 271 kcal metabolizable energy/100 g and 17% crude protein. A total of 275 eggs was examined. Mean values with s.e. were for (i)-(iii) resp.: egg wt., 42.95 ± 1.83, 48.71 ± 1.93 and 46.77 ± 1.63 (differences from (i) significant at $P < 0.05$); egg white content as % egg wt., 59.23 ± 1.49, 51.82 ± 0.88 ($P < 0.01$) and 55.19 ± 0.87 ($P < 0.05$); egg yolk content, correspondingly, 28.91 ± 0.95, 35.89 ± 0.82 ($P <$ 0.82 ($P < 0.01$) and 30.93 ± 0.83 ($P < 0.05$); and egg shell content, correspondingly, 9.67 ± 0.54, 10.83 ± 0.26 ($P < 0.05$) and 12.33 ± 0.52 ($P < 0.01$). Fat contents of egg yolk for (i)-(iii) resp. were 44.92 ± 4.27, 58.56 ± 2.35 and 58.86 ± 3.10 %. Protein contents decreased in egg white by 17 and 28% resp. in (i) and (ii) in comparison with (iii); and protein contents in egg yolk decreased correspondingly by 16 and 7%. SKK

124

Protein sparing effect of zinc proteinate on laying hen performance.
Reddy, K. S.
Dissertation Abstracts International, B 38 (6) 2447-2448: Order No. 77-26056, 72pp. (1977) [En] [Kansas State Univ., Manhattan, Kansas 66506, USA]

Hy-line W-36 egg-strain pullets were used to evaluate the performance of laying hens fed 2 protein levels (13 and 17%) with or without supplements. Studies were made of daily egg production, mortality, feed consumption and egg wt. and quality. Interior quality, as measured by the Haugh unit value, and shell quality, as measured by sp. gr. and thickness, were generally not significantly affected by protein level or supplements, but an increase in shell quality was observed when the low protein diet was supplemented with Zinpro-240. JA

125

Incidence of blood spots and/or meat spots in eggs from White Leghorn hens maintained under different housing conditions during their pullet year production.
Chand, D.; Razdan, M. N.
Indian Poultry Gazette **61** (4) 151-152 (1977) [2 ref. En] [Dep. of Anim. Production Physiol., Haryana Agric. Univ., Hissar, Haryana, India]

White Leghorn pullets were housed in (i) floor pens with 0.28 m^2/bird, (ii) floor pens with 0.14 m^2/bird, and (iii) in 3-tier individual laying cages with 0.14 m^2/bird. The incidence of blood and/or meat spots was 6.33% in (i), 12.5% in (ii), and 6.67% in (iii). The incidence of blood or meat spots in eggs was much greater in the hot months (May-June) than in the cool months (Feb.-March). CFTRI

126

Process and apparatus for egg shelling.
Zweip, T. C.; Newhouse, D. G.; Craner, J. D. (Country Queen Foods Inc.)
United States Patent 4 082 856 (1978) [En]

Process continuously shells hard boiled eggs by cracking the outer shells under vibration on an inclined plane and by flagellating eggs while subjected to a jet stream of fluid, which removes shells without damage to egg flesh. IFT

127

Egg handling.
Warren, W. H.
British Patent 1 501 976 (1978) [En]

Apparatus transfer eggs from egg trays to a moving conveyor, adapted to separate and remove broken or damaged eggs along with the emptied trays. IFT

128

Improvements in and relating to apparatus for preparing edible products.
Denmark, Dansk Andels Aegexport
British Patent 1 502 463 (1978) [En]

Process and apparatus are described to prepare a produce in the form of a coagulated egg white sheat enclosing an edible core filling, usually egg yolk, but minced meat or vegetables can also be used. IFT

129

Quality and acceptability of brine pickled duck eggs.
Trongpanich, K.; Dawson, L. E.

Food 7 (2) 31-37 (1975) [5 ref. En] [212/26 Amnvay-Sook Soi. 2, Petch-Kasem Rd, Bangkok 6, Thailand]

Cooked and raw duck eggs were held in saturated salt brine at 3° and 21°C for ≤4 wk. Fresh duck egg controls and brine-pickled eggs were evaluated, cooked or raw, for flavour, texture and colour by American and Thai panelists. American panel members preferred the control eggs and rejected or disliked the brined eggs, while Thai preferred all the salt brined eggs, especially those held in brine for 4 wk at 21°C. Salt contents of eggs increased during brining from 0.4 to >4.0%. No halophilic bacteria were detected in the controls. Counts in raw brined eggs were 63 × 10^3/g after 4 wk at 21°C, 50 × 10^3/g at 3°C, and 1700 × 10^3/g in cooked eggs brined at either temp. No Salmonellae were found in any sample. The pH of the egg whites of brined eggs fell from 8.8 to 7.5 and 8.1 after 3 wk at 3° and 21°C (vs a rise to 9.4 for controls after 4 wk at 3°C), that of the yolks remained constant at 6.5. RM

130

[Transfer of dietary aflatoxin B_1 into eggs and its effect on egg production.]
Morimoto, H.; Aibara, K.; Noro, H.; Otaki, H., Takagi, H.
Japanese Poultry Science [Nihon Kakin Gakkai-shi] 14 (2) 89-91 (1977) [6 ref. Ja] [Japan Sci Feeds Ass., Tokyo 101, Japan]

131

Effects of cooking methods on peelability and appearance of eggs.
Hall, K. N.; Lee, H. W.
Journal of Food Processing and Preservation 1 (2) 95-102 (1977) [12 ref. En] [Dep. of Nutr. Sci., Univ. of Connecticut, Storrs, Connecticut 06268, USA]

Ease of peeling and appearance of eggs cooked by cold water, boiling water and steam pressure methods were compared using oiled and unoiled fresh and stored eggs. Several time-pressure combinations for steam cooking of hard-cooked eggs were investigated (7.5-15.0 min, 5.0-15.0 lb/in^2). Best results for both appearance and peeling time were from eggs cooked at 7.5 lb/in^2 and 12.5 min; 10 lb/in^2 for 10 min and 15 lb/in^2 for 7.5 min also gave excellent results. Fresh eggs and eggs stored ≤16 days, oiled or unoiled, peeled quickest and had the best appearance when cooked by the steam pressure method. Rapid release of pressure at the end of cooking caused many shells to crack which added to ease of peelong. AS

132

Yolk protein and related traits in certain strains and strain crosses of chickens.
Lin, C. Y.; Friars, G. W.; Miller, F. M.
Canadian Institute of Food Science and Technology Journal 11 (3) 99-101 (1978) [8 ref. En, fr] [Dep. of Anim. & Poultry Sci., Univ. of Guelph, Guelph, Ontario, Canada]

2 separate experiments were conducted to evaluate the difference in the egg composition traits of brown and white shelled eggs. The results from both experiments consistently showed that white shelled eggs contain a higher level of yolk protein than brown shelled eggs. However, thesed differences could be the result of strain effects that were coincident with shell colour. Albumen and yolk % solids tended to increase with the increase in egg size across strains regardless of egg shell colour. No significant differences were detected between the white egg strains for the egg composition traits studied. The white egg strains were probably more genetically related to each other than they were to the brown egg strain. AS

133

Egg processing waste recovery. (In 'Proceedings of Sixth National Symposium on Food Processing Wastes' [see FSTA (1978) 10 12G768].) [Lecture]
Bulley, N. R.
Report No. EPA-600/2-76-224, 368-379 (1976) [3 ref. En] [Dep. of Agric. Eng., Univ. of British Columbia, Vancouver, British Columbia V6T 1W5, Canada]

A study was made of the feasibility of pretreatment of egg-breaking plant waste waters to remove the high-protein egg solids, and of the potential of a system for drying egg shells and their associated albumen to produce a saleable product. The addition of 200 p.p.m. alum to the waste waters at pH 5.1 produced a settleable floc. The solids removal efficiency of this treatment depends on the initial solids concn., but is of the order of 50% for typical egg-processing waste water. The BOD_5 removal is less dependent on original loading, and is approx. 70% or more. Electrocoagulation on a [illegible] removed 60-70% of effluent solids as a floating floc within 15 min. The drying of egg shells would appear to be a viable alternative method for handling this waste. JRR

134

Egg breaking and processing wastes control and treatment. (In 'Proceedings of Sixth National Symposium on Food Processing Wastes' [see FSTA (1978) 10 12G768].) [Lecture]
Jewell, W. J.; Siderewicz, W.; Loehr, R. C.; Zall, R. R.; Johndrew, O. F., Jr.; David, H. R.; Witherow, J. L.
Report No. EPA-600/2-76-224, 61-104 (1976) [15 ref. En] [Dep. of Agric. Eng., Cornell Univ., Ithaca, New York, USA]

The egg-breaking industry in the USA is briefly reviewed, with reference to production rate variability and economic importance. Investigation of wastewater treatment and control involved 5 egg-breaking plants at which effluents were monitored both before and after the institution of in-plant control measures. Discharges were typically highly contaminated, with COD >6000 mg/l., and BOD_5 about 60% of the COD. The average pre-modification product loss in the 5 plants was 12.5% by wt. of the processed output. In-plant waste

control reduced this loss to 6.4%. The max. reduction technically feasible is thought to be to approx. 2%, but this involves more costly modifications. Conventional processes for treatment of discharges, such as aerobic lagoons and activated sludge processes, produced effluents unsuitable for direct discharge to surface waters. When an anaerobic lagoon was followed by a 6 day hydraulic retention time aerobic lagoon, the overall COD removal efficiency was >98% at both 20° and 10° C and anaerobic retention times of 5-20 days. Effluent quality from such a system averaged 90 mg/l. soluble COD, 13 mg/l. soluble BOD_5, 92 mg/l. nitrate-N, 21 mg/l. ammonia-N and a turbidity of 5 units (JTU). JRR

135

Gentian violet and polychlorinated biphenyls in animal diets.
Olentine, C. G., Jr.
Dissertation Abstracts International, B 38 (1) 89: Order No. 77-13611, 76pp. (1977) [En]
[Clemson Univ., Clemson, S. Carolina 29631, USA]

When ^{14}C-labelled gentian violet was fed to chickens, no detectable tissue residues were found in the muscle, fat or skin 48 h after dosage; low (<0.05 p.p.m.) concn. were found in the liver, kidneys and eggs. Effect of feeding polychlorinated biphenyls to mice was also studied. HBr

136

[Whole liquid egg from unpasteurized fresh eggs.]
Vollei flüssig, unpasteurisiert aus Frischeiern.
German Democratic Republic, VVB Industrielle Tierproduktion
German Democratic Republic Standard **TGL 32921/01**, 4pp. (1976) [De]

This standard establishes general requirements for the processing of unpasteurized, cooled fresh eggs, and includes the following specific requirements: DM, ⩾24%; total bacterial count, $\leqslant 10^6$/ml; Salmonella/Shigella, coliforms and pathogenic staphylococci must be absent in 20 g, 0.001 g and 1 g product, resp.; product temp. ⩽12° C throughout processing; storage, -1° to +5° C; and the end product must be processed further within 1 day. HBr

EGG PRODUCTS

1

[Results of 10 years experience of CNEN in the field of food irradiation. Considerations on technological, economic and legal aspects.]
Baraldi, D.; Cervigni, T.
Rivista della Societa Italiana di Scienza dell'Alimentazione 7 (1) 53-64 (1978) [36 ref. It] [Div. Applicazioni delle Radiazioni, CNEN, CSN Casaccia, S. Maria de Galeria, Rome, Italy]

A review is given of studies on γ-irradiation of foods, especially sterilization of fruit, vegetables, egg products, poultry etc., and inhibition of sprouting of potatoes. Effects of irradiation on the composition and quality of foods are discussed. Practical aspects of food irradiation are discussed, and costs are considered with special reference to equipment for irradiation of vegetables. Studies on marketing of irradiated potatoes in Italy are discussed, and legal aspects of food irradiation are considered. AJDW

2

[Participation of Bel Industries at Anuga 1977. New products.]
Anon.
Revue des Fabricants de Confiserie, Chocolaterie, Confiturerie, Biscuiterie 53 (1) 11-17 (1978) [Fr]

The report in the preceding abstr. is continued to present further recipes substituting Bianbel 193 for eggs in various confectionery products (soft marshmallows, meringues) and omelettes, and also definition, utilization, packaging and analysis of 'Sucrabel', a lactose product. RM

3

Frozen sweet souffle.
Brule, R.
United States Patent 4 068 013 (1978) [En]

A freezable culinary preparation for sweet souffles comprises a homogeneous mixture of a cooked pastry cream, an uncooked chou paste and stiffly beaten egg whites in a vol. ratio of about 1.5:1:1.5, based upon the vol. of basic liquid of each ingredient. IFT

4

[Microbiological and technological aspects of pasteurization of egg products.]
Veerkamp, C. H.; Mulder, R. W. A. W.; Erdtsieck, B.
Voedingsmiddelentechnologie 10 (14) 20-23 (1977) [3 ref. NI] [Inst. voor Pluimveeonderzoek Het Spelderholt, Beekbergen, Netherlands]

Microbiological and process-technical aspects of pasteurization of egg products are discussed, including: detn. of D- and Z-values; effects of food composition and pasteurization temp. and time on the efficacy of pasteurization; differences in heat resistance between species of bacteria; and effects of laminar vs. turbulent flow in the pasteurizer on the efficacy of elimination of microorganisms. Studies on effects of various factors on elimination of Streptococcus faecalis and effects of turbulent and laminar flow on pasteurization efficiency are briefly described. AJDW

5

Apparatus for producing pieces of eggs.
Lanoie, P. E.
United States Patent 4 068 570 (1978) [En]

A liquid egg mixture and steam are brought into contact to produce a blend of egg product, which is then held in a rotatable, elongated cylinder until it is completely cooked, the rotation of the cylinder bringing about disintegration of the product into small pieces. IFT

6

[Liquid and dried eggs in the food industry.]
Gianninoto, S. I.; Perillo, G.
Industrie Alimentari 16 (12) 81-88 (1977) [16 ref. It]

Refrigerated eggs-in-shell have a fragile vitelline membrane and require very careful transport, which severely limits their utilization in the food industry, preserved liquid, frozen or dried egg (whole, white or yolk) is normally used. Descriptions and diagrams, with operating temp. and times, etc. and characteristics of the final products are given for (i) lyophilized egg (ii) frozen liquid egg and (iii) spray-dried egg. (i) egg has reduced vol. and wt., long keeping quality with retention of flavour and easy reconstitution, but processing costs are high. (ii) products form ice crystals from free water and possibly internal bound water (proportions are given of water frozen at -5° to -30° C). Slow freezing produces large ice crystals which disrupt cell and protein structure, leading to more difficult reconstitution, leakage of interstitial water, increased viscosity after reconstitution with more difficult pumping and mixing with milk or sugar; some original fresh flavour is lost and great care is needed to avoid Salmonella infections. Spray-dried egg tends to be preferred by the food industry; the product has a constant composition, is compact (1 kg powder = 85 fresh eggs), reconstitutes easily, and has reliable properties and good hygienic quality. No loss of nutritive value occurs if glucose is removed by enzyme treatment before drying to prevent Maillard reactions. Data indicate that retention of vitamins A_1, B_1, and B_6 is better over 12 months than in frozen egg at -9° C. ELC

7

[Microbiological specifications for egg products.]
Schothorst, M. van; Leusden, F. M. van
Voedingsmiddelentechnologie 10 (22) 16-19 (1977) [8 ref. NI]

Aspects considered in this discussion of specifications for acceptable counts of salmonellae and other bacteria in egg products include: FAO/WHO, ICMSF, etc. recommendations; sampling systems; 2- and 3-class evaluation schemes; the relative merits of various enrichment

and culture media; the value of total Enterobacteriaceae count as an indicator of contamination by Salmonella; and the interrelation of schemes for evaluation of the acceptability of batches of processed egg products. AJDW

8

Use of animal proteins in food.
Howell, N.
International Flavours and Food Additives **9** (3) 119-124, 126 (1978) [34 ref. En] [J. Lyons & Co. Ltd., London W14, UK]

Consideration is given to the functional properties of the main animal proteins, meat, gelatin and eggs. A brief description is first given of the basic structure and chemical properties of proteins in order to understand their behaviour and how this behaviour may be manipulated. Consideration is given to: the basic structure and functions of meat, mainly beef; the partial replacement of myofibrillar proteins with non-meat proteins such as slaughterhouse wastes like blood and offal; the preparation of gelatin from collagen and to gelation properties; and egg proteins, their functional properties, and use in baking cakes. VJG

9

[Egg powder. Quality requirements.]
Hungary, Magyar Szabvanyugyi Hivatal
Hungarian Standard MSZ 6827/1-76, 8pp. (1976) [Hu]

10

[Egg powder. Sampling, examination, and classification.]
Hungary, Magyar Szabvanyugyi Hivatal
Hungarian Standard MSZ 6827/2-76, 12pp. (1976) [Hu]

EGG SHELL

1

Amino acid analysis of shell membranes of eggs from young and old hens varying in shell quality.
Britton, W. M.; Hale, K. K., Jr.
Poultry Science 56 (3) 865-871 (1977) [10 ref. En] [Dep. of Poultry Sci., Univ. of Georgia, Athens, Georgia 30602, USA]

2

[Chloride requirements in laying hen feeds.]
Versuch über den Chloridbedarf im Legehennenfutter.
Vogt, H.
Archiv für Geflügelkunde 41 (4) 125-129 (1977) [9 ref. De, en, fr, ru] [Inst. für Kleintierzucht, Forschungsanstalt für Landwirtschaft, Dörnbergstrasse 25-27, D-3100 Celle, Federal Republic of Germany]

216 young HNL hens were used in a feeding trial (over the range 24-68 wk of age) conducted to evaluate effects of the Cl^- content of the diet on laying performance and the shell quality of the eggs. Diets studied contained 0, 0.04%, 0.08%, 0.12%, 0.16% or 0.20% added Cl^-, as $CaCl_2$. Na:Cl ratios of these diets were, resp.: 1:0.43, 1:0.56, 1:0.79, 1:1.05, 1:1.26, and 1:1.51. Tables of results are given, including values for the % cracked eggs, shell thickness, shell breaking strength, and shell deformation under compression. Overall, shell quality of eggs of the group fed no added Cl^- tended to be superior to that of eggs laid by the other groups; shell quality of the group fed 0.20% added Cl^- was inferior to that of the other groups. AJDW

3

[Can source and particle size of calcium carbonate feed supplements influence egg shell quality?]
Kann Herkunft und Korngrösse des kohlensauren Futterkalkes die Eischalenstabilität beeinflussen?
Vogt, H.
Archiv für Geflügelkunde 41 (5) 202-212 (1977) [48 ref. De, en, fr, ru] [Inst. für Kleintierzucht, Forschungsanstalt für Landwirtschaft, Dörnbergstrasse 25-27, D-3100 Celle, Federal Republic of Germany]

A total of 288 HNL young hens was used in 322-day feeding trials conducted to evaluate effects of crystalline vs. amorphous $CaCO_3$ and particle size of the $CaCO_3$ (fine vs. coarse) on egg shell quality. Data are given for the % cracked eggs, deformation under compression, breaking strength and shell thickness. The results show that coarse $CaCO_3$ tended to give better shell quality than fine $CaCO_3$; shell quality was not significantly influenced by the crystalline vs. amorphous nature of the $CaCO_3$. AJDW

4

The effect of supplemental calcium and vitamin D_3 on line and strain differences in egg shell strength.
Potts, P.; Washburn, K. W.
Poultry Science 56 (4) 1067-1072 (1977) [17 ref. En] [Dep. of Poultry Sci., Univ. of Georgia, Athens, Georgia 30602, USA]

Supplemental Ca, as oyster shell fed ad lib., improved egg shell strength in the 12th month of laying (premoult) but not post-moult. Injection of vitamin D_3 did not affect egg shell strength. JRR

5

The hen's egg: relationship of mean strain energy at shell fracture to shell compression speed, the nature of the compressing body and the location on the shell of the point of contact.
Carter, T. C.
British Poultry Science 18 (2) 205-211 (1977) [24 ref. En] [Agric. Res. Council, Poultry Res. Cent., West Mains Road, Edinburgh EH9 3JS, UK]

6

The effect on egg-shell thickness of the inclusion of the calcinogenic plant Solanum malacoxylon in the diet of laying hens.
Morris, K. M. L.; Jenkins, S. A.; Simonite, J. P.
Veterinary Record 101 (25) 502-504 (1977) [13 ref. En] [Dep. of Biol. Sci., City of London Polytechnic, London, UK]

24 Ross Ranger and 24 Shaver Starcross laying hens were used in a 6-wk feeding trial conducted to evaluate effects of diets containing dried powdered Solanum malacoxylon leaves (which contain 1,25-dihydroxycholecalciferol) on shell thickness. The birds received an unsupplemented basal diet for the first 2 wk of the experiment; they were then transfered to diets supplemented with 0.35% dry S. malacoxylon leaves or 0.35% dry tomato leaves (control) for the second 2 wk, then returned to the basal diet for the final 2 wk of the trial. Shell thickness (as mg/cm^2) was determined at various stages of the study. A table of results is given. The results show that shell thickness increased on the second and subsequent days of the period when dry S. malacoxylon leaves were fed, and decreased again when these were withdrawn from the diet. Possible application of this effect of dietary S. malacoxylon leaves to improvement of shell strength is discussed. AJDW

7

[Determination of the strength of egg shells and criteria for its evaluation.]
Bacikova, Z.
Hydinarsky Priemysel 19 (4) 177-192 (1977) [8 ref. Sk] [Vyskumny Ustav Hydinarskeho Priemyslu, Bratislava, Czechoslovakia]

Methods for evaluation of the shell strength of eggs, developed at the Poultry Industry Research

Institute, for the purpose of amendment of the Czechoslovak standard for hens' eggs, are discussed. On the basis of statistical evaluation of these studies, a min. shell strength of 21 N is proposed for inclusion in the new standard. STI

8

Effects of rearing regime, a chelating agent and the source of supplemental calcium and protein in the laying diet on egg shell thickness and performance of crossbred layers.
Karunajeewa, H.
Australian Journal of Experimental Agriculture and Animal Husbandry 17 (89) 934-943 (1977) [26 ref. En] [Dep. of Agric., Werribee, Victoria, Australia]

832 White Leghorn × Australorp hens were used in a study on factors influencing laying performance and egg shell thickness. Variables studied included: physical form of the diet (all mash, or mash + whole grain); Ca supplement (ground limestone vs. cockle shell grit); protein supplement (soybean meal vs. meat + bone meal); and diets with or without 600 p.p.m. EDTA. Tables of results are given, including values for egg sp. gr., shell wt. and shell wt./unit area for eggs laid over the hen age ranges 24-48 and 48-72 wk. Results for the younger hen age range show that: shell grit gave significantly higher egg sp. gr. and shell wt./unit area than limestone; soybean meal gave significantly higher values than meat + bone meal for all 3 characteristics; and rearing on the diet containing whole grain gave higher shell wt. than rearing on the all-mash diet. Results for the older hen age group show that: dietary EDTA significantly reduced shell wt./unit area; soybean meal gave significantly higher egg sp. gr. than meat + bone meal; and the whole grain-containing diet gave higher shell wt. and shell wt./unit area than the all-mash diet. AJDW

9

Influence of high calcium rearing diets, Christmas Island phosphate and ethylenediaminetetraacetic acid on the laying performance of White Leghorn × Australorp hens.
Karunajeewa, H.
Australian Journal of Experimental Agriculture and Animal Husbandry 17 (89) 944-948 (1977) [17 ref. En] [Dep. of Agric., Werribee, Victoria, Australia]

Groups of White Leghorn × Australorp pullets were used in a study on factors influencing egg sp. gr. and shell wt./unit area. Variables studied were: Ca level in the rearing diet (0.91-1.12 or 1.45-1.93%); P supplement source (sterilized bone meal or Christmas Island phosphate); and incorporation of 0, 300 or 500 p.p.m. EDTA in the laying diet. Laying performance and shell quality were evaluated over the age range 24-72 wk. Tables of results are given. The results show that the high-Ca diet tended to result in thinner-shelled eggs than the low-Ca diet. Dietary EDTA also tended to decrease shell thickness; P supplement source did not significantly influence shell quality. AJDW

10

Improve egg shell quality by replacing vitamin D_3 with 25-hydroxy-D_3.
Ramappa, P. S.; Deve Gowda, G.
Poultry Guide 15 (1) 25-26 (1977) [5 ref. En] [Dep. of Poultry Sci., Univ. of Agric. Sci., Hebbal, Bangalore 560 024, Karnataka, India]

Studies on the replacement of vitamin D_3 by its metabolite, 25-hydroxy-vitamin D_3, in the diet of layers to improve the egg shell thickness (and consequently to reduce the breakage of eggs) are reviewed. CFTRI

11

Prolonged effects of Kepone on strength and thickness of eggshells from Japanese quail fed different calcium level diets.
Eroschenko, V. P.; Place, T. A.
Environmental Pollution 13 (4) 255-264 (1977) [23 ref. En] [Dep. of Biol. Sci., Univ. of Idaho, Moscow, Idaho 83843, USA]

Severe contamination of the environment in Virginia, USA by the organochlorine pesticide Kepone (decachlorotetracyclodecanone) has created concern, including fears of effects on reproduction by hens and avian spp. in the environment, particularly during periods of low dietary Ca, e.g. the breeding season. 25 Japanese quail, aged 5 wk, were fed a low Ca diet for 120 days, followed by a high Ca diet for 120 days; a further 42 quail were fed similarly but with addition of 200 p.p.m. Kepone to the diet. All birds were kept at 20° C, with 16 h light and 8 h darkness, and their eggs were collected at intervals and tested for strength, cracking and fractures. Eggshell strength was measured for the vertical and the horizontal axes and thickness of the shell was measured at the equator. With continued feeding of Kepone, egg shell strength and thickness deteriorated and breakage increased markedly as compared with the control group, and the situation was not corrected by the subsequent transfer to a high Ca diet. In addition, the Kepone-fed birds gradually ceased egg laying and then died; at the end of the experiment >60% of all eggs laid were broken and 90% of birds were dead. No illness or mortality occurred among the control birds. Post mortem examinations revealed abnormalities of the reproductive organs. ELC

12

[32nd Meeting of the German Association for Nutritional Physiology of Domestic Animals. Göttingen, 20-22 March 1978.] 32. Tagung in Göttingen vom 20. bis 22. März 1978. 25 Jahre Gesellschaft für Ernährungsphysiologie der Haustiere. [Conference proceedings]
Germany, Federal Republic of, Gesellschaft für Ernährungsphysiologie der Haustiere
Zeitschrift für Tierphysiologie, Tierernährung und

Futtermittelkunde 40 (3) 109-134 (1978) [De]

Abstracts are given of papers presented at this symposium, including the following which give data of interest to food scientists: Quantitative determination of aflatoxins B_1, B_2, G_1 and G_2 in food and feeds by high-pressure liquid chromatography, by H. Schweighardt, J. Böhm, J. Leibetseder (p. 115); Effects of graded lysine supplements on the performance and carcass quality of swine, by O. P. Walz & H. Brune (pp. 121-122); Effects of energy supply on protein deposition by fattening swine, by A. Hüttmann & H. Henkel (pp. 123-124); Effect of ripeness on thermal damage to protein during drying of maize, by I. Deubelius, M. Thormählen, W. Huss & W. Mühlbauer (pp. 126-127); Stability as a quality criterion of feed and carcass fats, by W. Hartfiel (p. 127); Fattening performance and body composition of German Black Pied and German Simmental bulls, in dependence on energy intake and live weight, by R. Daenicke, K. Rohr, E. Schulz & H. J. Oslage (pp. 128-129); and Effects of P and Na contents in hen feed on laying performance and egg shell stability, by H. Vogt (p. 131). AJDW

13

[Egg shell quality and carbonic anhydrase activity of the shell gland in the domestic fowl.]

Hirakata, Y.; Hetsuka, K.; Ohashi, T.

Bulletin of the Faculty of Agriculture, Miyazaki University [Miyazaki Daigaku Nogakubu Kenkyu Jiho] 24 (1) 1-4 (1977) [8 ref. Ja, en]

20 White Leghorn hens (half 7-month-old and half 20-month-old) were used in a study on hen age differences in egg shell quality and the relationship between uterine carbonic anhydrase activity and shell quality. Mean values for the characteristics studied were, for the 7-month-old and 20-month-old hens resp.: egg wt. 46.9 and 64.4 g; shell strength 3.98 and 2.98 g; shell thickness 0.382 and 0.369 mm; shell wt. 4.8 and 5.8 g; shell wt./egg wt. ratio 10.3 and 9.0%; and uterine carbonic anhydrase activity (velocity constant) 0.52 and 0.42. Differences in egg wt., shell wt. and carbonic anhydrase activity were statistically significant ($P < 0.01$). [From En summ.] AJDW

EGG WHITE

1

[Dry wafer food.]
Matsumura, M.
Japanese Patent 5 221 069 (1977) [Ja]

A mixture of egg white and either active gluten or sodium casein is mixed with sugar, jelly and a swelling agent, after which it is moulded and dried at 100-120° C. IFT

2

High purity protein recovery.
Palmer, D. E.
Process Biochemistry **12** (5) 24-26, 28 (1977) [En] [Viscose Group Ltd., Swansea, UK]

Recovery of high purity, undenatured, functional protein from cheese whey by the Vistec process is detailed. The process uses a newly developed range of regenerated cellulose ion exchange materials which have the ability to adsorb selectively great quantities of high mol. wt. materials, particularly proteins, from solution. The plant consists essentially of a hold tank and filter bottom stirred tank reactor; when the reactor is drained, media are retained by the filter and thus separated from process liquors. The process consists of 3 main operations: separation and isolation of protein by the Vistec system; concn. of the proteinaceous eluate, usually by ultrafiltration; and spray-drying to recover protein powder. Flow-sheets of the plant and of the process sequence are included. The Vistec process can be used as a primary treatment system or in conjunction with established methods of whey treatment (e.g. with whole whey drying, with ultrafiltration, with pre-concn. by ultrafiltration, and by incorporation into an existing ultrafiltration system); these combined systems are described with the aid of flow diagrams and tabulated process data. The chemical and functional properties of the whey protein isolate produced by the Vistec process are discussed and the economics of the process considered. The isolate is a virtually pure protein product (97% protein in DM), consisting of a mixture of α-lactalbumin and β-lactoglobulin, is substantially free of fat and lactose, has a low ash content, and is soluble and undenatured. It has excellent functional properties (solubility, foam stability, gelation) and can in many products serve as a complete replacement for egg white. JA

3

Effect of treatments, storage periods and conditions on the electrophoretic pattern of egg white proteins.
Sachedev, A. K.
Indian Poultry Gazette **61** (1) 17-19 (1977) [6 ref. En] [Div. of Poultry Res., Indian Vet. Res. Inst., Izatnagar, Uttar Pradesh, India]

Eggs were (i) sprayed with mineral oil, (ii) sprayed with refined groundnut oil containing 0.0125% BHT or (iii) not treated (controls), and stored for 6 wk at room temp. or under refrigeration. Treatments (i) and (ii), at room temp. and under refrigeration did not show any change in the non-mobile protein, conalbumin or ovoglobulin fractions. The ovalbumin fraction was unaffected by (i) and (ii), but increased under refrigeration. The ovomucoid fraction decreased significantly at room temp. while under refrigeration the decrease was not statistically significant. The ovomucoid fraction increased in the combined treatment of (ii) and refrigeration. CFTRI

4

Studies on the carbohydrate of egg-white ovomucin.
Smith, M. B.; Reynolds, T. M.; Buckingham, C. P.; Back, J. F.
Australian Journal of Biological Sciences **27** (4) 349-360 (1974) [23 ref. En] [Div. of Food Res., CSIRO, Food Res. Lab., PO Box 52, North Ryde, NSW 2113, Australia]

5

Production of egg white substitute from whey.
Chang, P. K. (Stauffer Chemical Co.)
United States Patent 4 029 825 (1977) [En]

The process involves adding to liquid whey an effective amount of sodium lauryl sulphate (e.g. 0.10-0.50% by wt.) to form a whey protein-sodium lauryl sulphate (SLS) complex which precipitates from the solution, and reducing the sodium lauryl sulphate content of the complex to no greater than 1.0% by wt. The starting material may be the first fraction of partly delactosed whey mother liquor after passage through a molecular sieve resin. A typical composition for SLS modified whey product is 72.4% protein, 5.9% ash, 2.0% moisture, 3.3% fat and 16.4% lactose. It could replace satisfactorily 50% of dried egg albumin in the manufacture of meringues. EJM

6

[Calorimetric measurement of heat of hydration of foods.] Kalorimetrische Bestimmung der Hydrationswärme von Lebensmitteln.
Riedel, L.
Chemie Mikrobiologie Technologie der Lebensmittel **5** (4) 97-101 (1976, publ. 1977) [5 ref. De, en, fr] [Bundesforschungsanstalt für Ernährung, Karlsruhe, Federal Republic of Germany]

The heat of hydration of a number of different foods (including wheat flour, rice, linseeds, skim milk, egg-white and milk) was measured at 25° C in relation to the water content by means of a Cu calorimeter. The experimental data are summarized in a mathematical formula with 2 constants characteristic for the individual substance. The differential heat of water sorption was calculated, which is decisive for the relationship of the sorption isotherm to temp. From the experimental data a diagram was constructed, permitting a rough estimation of the influence of temp. on the water activity of foods in hygroscopic equilibrium. AS

7

Functional properties of acetylated and succinylated egg white.
Sato, Y.; Nakamura, R.
Agricultural and Biological Chemistry 41 (11) 2163-2168 (1977) [21 ref. En] [Lab. of Food Sci. & Tech. (Anim. Products), Fac. of Agric., Nagoya Univ., Nagoya, Japan]

Effects of heating on the functional properties of egg white acylated with either acetic anhydride or succinic anhydride were studied. The coagulation temp. of egg white greatly increased (from 60° to 80° C) with acylation in the alkaline pH region. The foaming properties of egg white were improved by acylation, and heat-induced damage of the foaming properties was greatly reduced by acylation. These phenomena were observed in egg white in which over 30% of the available amino groups were acylated. AS

8

[Membrane-assisted concentration of egg white. I. Concentration by reverse osmosis and ultrafiltration.]
Zdziennicki, A.; Rembowski, E.; Plotka, A.; Schmidt, J.
Prace Instytutow i Laboratoriow Badawczych Przemyslu Spozywczego 27 (1) 29-39 (1977) [13 ref. Pl, ru, en] [Inst. Przem. Fermentacyjnego, Warsaw, Poland]

Frozen and thawed (at 40° C) eggs were tested Double concentration by reverse osmosis and ultrafiltration in the Osmotic instrument (manufactured by Calgon-Havens) was carried out The instrument has tubular membranes of cellulose acetate. The 310 type membranes had 75% retention capacity for NaCl and were used for the reverse osmosis; 215-type membranes were used for intercepting molecules exceeding 20 000 mol. wt Egg albumen was concentrated under the following conditions: -20° C; 50-20 atm pressure during reverse osmosis, and 25 atm during ultrafiltration In conditions of double concentration, the retention was within 60-80% for mineral compounds, depending on the process parameters. Considerable effects of pressure on the membrane-assisted process and on the foaming ability of the concentrates were observed [See following abstr. for part II.] STI

9

[Membrane-assisted concentration of egg white. II. Concentration by low-pressure ultrafiltration.]
Plotka, A.; Schmidt, J.; Zdziennicki, A
Prace Instytutow i Laboratoriow Badawczych Przemyslu Spozywczego 27 (1) 41-49 (1977) [10 ref. Pl, ru, en] [Inst. Przem. Fermentacyjnego, Warsaw, Poland]

The 20-0, 36-Lab Sanovo DDS laboratory equipment was used for the concentration; ultrafiltration removed almost half of the original glucose in the albumen, and a considerable % of the mineral salts. Protein foaming is better if 0.5% NaCl solution is added as diluent, or if the filtrate is used instead of water. The spray-dried concentrate, produced after preliminary ultrafiltration, has the same basic indices as those of non-concentrated albumen, but it has a higher bulk wt. Practical advantages are economy of packaging materials, transportation and storage capacities. [See preceding abstr. for part I.] STI

10

[Noodle enrichment.]
Taiyo Kagaku Kogyo Co. Ltd.
Japanese Patent 5 243 898 (1977) [Ja]

An albumen residue from which lysozyme has been removed is blended with NaCl and added to noodle or other raw pasta materials for use in the production of instant noodle products. IFT

11

Pasteurization of dried egg white by high temperature storage.
Northolt, M. D.; Wiegersma, N.; Schothorst, M. van
Journal of Food Technology 13 (1) 25-30 (1978) [4 ref. En] [Lab. for Zoonoses & Food Microbiol., Nat. Inst. of Public Health, PO Box 1, Bilthoven, Netherlands]

The effects of pan drying of egg white, and of hotroom storage of dried egg white, were investigated on the survival of Salmonella oranienburg. Fermented egg white was inoculated to give 10^7-10^8 organisms/ml, the pH was adjusted with citric acid or ammonia 4 h after inoculation and the egg white held at 20° C for 24 h before pan drying at 40° C and 40-45% RH for 48 h. After pan drying, the flakes were bottled, held at 40° C for 24 h, and then held at 49°, 51°, 53° or 55° C for 14 days. The product moisture was 10.5-10.7%. The effect of citric acid addition on survival of S. oranienburg during the 1st holding period was slight, and was proportional to the amount added in the pH range 4.7-5.1. Ammonia addition caused marked inactivation; a decimal reduction of 2.3 was given for pH 9.8 in the 1st 24 h after pH adjustment. Adjustment to pH 4.9 followed by 14 days at 55° C gave a decimal reduction (over the 14 days) of 4.8 of S. oranienburg; adjustment to pH 9.8 + 14 days at 49° C gave a decimal reduction of 5.4. The effects of spray-drying + hotroom treatment were studied for Citrobacter sp., Klebsiella pneumoniae and Enterobacter. Spray-drying gave a decimal reduction of 4.0 for product moisture 5.9-6.8%, and 14 days at 49° C gave a decimal reduction of 4.9. It is concluded that these conditions would inactivate S. oranienburg, which had a higher heat resistance than the other organisms tested. DIH

12

Chemical and microbial evaluation of Egyptian dried egg white prepared by different techniques.
Darwish, N. M.; Shehab, S. K.; Sadek, M. A.

Nahrung **21** (9) 757-763 (1977) [15 ref. En, de, ru] [Dep. of Nutr. & Food Chem., Coll. of Women, Ain Shams Univ. Heliopolis, Cairo, Egypt]

Egg white was dried (by pan-drying or spray-drying) with prior glucose removal by fermentation with (i) Streptococcus lactis, (ii) Aerobacter aerogenes or (iii) Saccharomyces cerevisiae, or with (iv) glucose decomposition by means of a crude glucose oxidase/catalase preparation from Penicillium notatum, or (v) without prior glucose removal. Data are given for the proximate composition (moisture, protein, glucose, ether extract, insoluble matter) and microbiological quality (total count, counts of sporeformers, yeasts and coliforms, and presence vs. absence of salmonellae) of the dried samples; electropherograms of the protein fractions are also given. Differences in chemical composition were small, except for insoluble matter (ranging from 0.74% for (v) to 4.24% for (i)). Total count ranged from 4.0×10^2 for (v) to 45×10^3 for (ii); sporeformer counts ranged from 80/g in (v) to 500/g in (iv); and coliform counts ranged from 11/g in (i) and (iii) to 49/g in (iv) and (v). Yeasts were present only in (iii) (at a count of 590/g). No salmonellae were detected in any sample. Microbiological quality was slightly inferior to that of an imported sample of dried egg white. Electropherograms of protein fractions from the dried products did not show any significant differences attributable to treatments. AJDW

13

Changes in lysozyme during egg white thinning.
Kato, A.; Wakinaga, T.; Matsudomi, N.; Kobayashi, K.
Agricultural and Biological Chemistry **42** (1) 175-176 (1978) [9 ref. En] [Dep. of Agric. Chem., Fac. of Agric., Yamaguchi Univ., Yamaguchi, Japan]

Changes in lysozyme activity during storage of egg white for 5 days were investigated by densitometer traces of electrophoretic patterns and by enzyme assay. Thick white gives (i) a liquid and (ii) a gel fraction after centrifugation at 87 000g_n for 1 h. The ratios of lysozyme concn. and of activity, (ii):(i), ertr 1.4-1.6 before storage, and approx. 1.0 after storage for 5 days at 30°C. Lysozyme activity in thick white decreased to approx. 60% after storage for 5 days at 30°C, the decrease being less at lower temp. The loss of activity was greatly reduced by storage of thick white in a CO_2 atm at 30°C (final pH after 5 days 6.5). The effects of pH and temp. on lysozyme activity are similar to their effect on egg white thinning; it is suggested that denaturation of lysozyme may be a factor in weakening egg white gel structure. DIH

14

Chemical and related osmotic changes in egg albumen during storage.
Heath, J. L.
Poultry Science **56** (3) 822-828 (1977) [14 ref. En] [Dep. of Poultry Sci., Univ. of Maryland, Coll. Park, Maryland 20742, USA]

The relationship of albumen pH, bicarbonate buffering system and migration of components across the vitelline membrane to the osmotic properties of egg albumen was studied. Effects of storage time, storage temp. and shell oiling were also evaluated. Oiling resulted in a reduction of albumen pH. Refrigerated (7°C) a greater decrease in albumen pH was found when compared to those at 22°C. (room temp.). Titration of albumen from eggs stored at 22°C for 14 days indicated that the buffering capacity was reduced as the pH increased. pH increase levelled off after 7 days and the vol. of acid required to titrate the albumen was reduced 58%. The largest reduction in buffering capacity came between pH 9.0 and 9.3 (3 and 7 days storage). The largest change in pH occurred between 0 and 3 days. Thick albumen lost buffering capacity more quickly than did thin in unoiled eggs. No differences were found when the eggs were oiled. Storing eggs sealed with oil to prevent CO_2 loss resulted in no change in osmotic concn. (OC) of the albumen. When the eggs were not sealed a decrease in OC was observed. This decrease was more pronounced at 22°C, 255 to 230 milliosmols, than at 7°C, 255 to 239 milliosmols. It was apparent that the osmometer could detect CO_2 loss from the albumen. A new osmotic equilibrium was established at a lower level of OC. From the data it appeared that the eggs were not in osmotic equilibrium when laid. CO_2 loss from the egg over a 7 day storage period was determined and compared to the OC. Most of the CO_2 was removed from the eggs during the first 2 days. The first day accounted for a majority of the loss. Free amino acids were demonstrated to move from the yolk across the vitelline membrane to the albumen. Most of this movement was found to occur after 14 days of storage. Sulphydryl groups increased in the albumen over a 28 day storage period but did not diffuse from the yolk. The source of SH groups was apparently from reduction of S-S bonds. AS

15

Depletion of glucose in egg albumin before dehydration by a fungal crude enzyme complex.
Hamed, M. G. E.; Sadek, M. A.
Egyptian Journal of Food Science **2** (1) 71-78 (1974) [10 ref. En, ar] [Food Tech. Dep., Nat. Res. Cent., Dokki, Cairo, Egypt]

Sound chicken eggs were broken and the whites separated from the yolks. The whites were blended and forced through a fine screen. An attempt to remove glucose from the whites by natural fermentation proved unsuccessful; after 96 h at 86°F the decrease in the glucose content was very small, the pH had decreased from 9.30 to 5.75 and a putrid odour had developed. A crude enzyme complex (consisting of glucose oxidase and catalase) obtained from Penicillium notatum was successful in removing glucose from the whites; addition of H_2O_2 was necessary to ensure complete glucose removal. 0.75 ml of the enzyme complex, in the presence of 0.21 ml of 27% H_2O_2, completely

removed the glucose from 100 ml of egg white within 11 h when the pH of the white was adjusted to 7.3 and when the holding temp. was 14.5° C. The activity of the enzyme complex was greater at pH 6.0 than at pH 7.3 or 9.3, and greater at a holding temp. of 14.5° C than at 25° or 37° C. JA

16

Fouling of heat transfer surfaces by solutions of egg albumin.

Ling, A. C.; Lund, D. B.

Journal of Food Protection 41 (3) 187-194 (1978) [21 ref. En] [Dep. of Food Sci., Univ. of Wisconsin, Madison, Wisconsin 53706, USA]

Egg albumen solutions were heated in a double tube heat exchanger having stainless steel surfaces, and factors affecting the rate of fouling were studied. Variations in fluid flow rate from 25.1 to 40.9 cm/s (corresponding to fluid Reynolds numbers of 9700 and 15 900) did not significantly affect rate of fouling. Increasing the heat exchange surface temp. from 66.2° to 74.6° C with fluid bulk temp. of 41-42° C increased the fouling rate from 1.62×10^{-2} to 8.33×10^{-2} cm^2° K/cal. Decreasing the fluid bulk temp. from 41.5° to 29.0° C with heat exchange surface temp. of 69.0-70.9° C (i.e. increasing the temp. difference) increased the fouling rate from 3.74×10^{-2} to 9.58×10^{-2} cm^2° K/cal. Increasing protein concn. from 0.094 to 0.24% (w/v) increased the fouling rate from 0.83×10^{-2} to 10.17×10^{-2}. 3 different types of mechanically-finished surfaces gave similar fouling rates despite great apparent differences in smoothness. A PTFE-coated surface gave no visible fouling. Coating the stainless steel surfaces with a silicone emulsion, Dow Corning 24, gave erratic results. DIH

17

Proteolytic enzymes and the functionality of chicken egg albumen.

Regenstein, J. M.; Grunden, L. P.; Baker, R. C.

Journal of Food Science 43 (1) 279-280 (1978) [4 ref. En] [Dep. of Poult. Sci., Cornell Univ., Ithaca, New York 14853, USA]

Egg white was subjected to proteolysis by ficin, bromelin, papain, trypsin and protease; changes in functional properties were monitored. Many of the changes observed were due to the addition of enzyme rather than actual proteolysis (e.g. foam vol. increase, foam stability decrease, and angel cake vol. increase). Angel cake vol. showed a further increase with proteolysis, but off-flavours were also noted. In experiments with ficin and bromelin, proteolysis by both enzymes decreased the coagulum strength while only ficin decreased the amount of noncoagulable protein. IFT

18

Apparatus for studying fouling of heated surfaces by biological fluids.

Ling, A. C.; Lund, D. B.

Journal of Food Science 43 (2) 390-393, 403 (1978) [19 ref. En] [Dep. of Food Sci., Univ. of Wisconsin-Madison, 1605 Linden Drive, Madison, Wisconsin 53706, USA]

A laboratory-scale double tube heat exchanger was developed to study fouling phenomena of biological fluids. The test fluid is continuously circulated through the system exposing the solution to an electrically-heated stainless steel section. The stainless steel section is 0.25 in diam. and is located on the centre-axis of 1-in diam. glass-pipe. The heat transfer characteristics of the system were determined and egg albumen solution was used to test the applicability of the system for studying fouling. The system was found to be stable and reproducible. The system can be used to study the effects of operational variables (such as surface temp., velocity and fluid temp.) and fluid characteristics on fouling rates. The test surface can be easily interchanged to study surface characteristics also. IFT

19

A foodstuff.

Stevenson, A. J. (Cerebos Africa Ltd.)

South African Patent 76/7718 (1978) [En]

A foodstuff comprises a mixture of a substance obtained by treating egg white with an enzyme and an acid and dehydrating the product, milk powder and one or more filler materials. W&Co

20

[Texturizing method for casein.]

Fukushima, M.; Izutsu, T.; Kimura, T.; Murata, H.; Dohsako, S.; Taneya, S.; Furuichi, E.

XV Congres International de Laiterie, Vol. F F, 923 (1978) [Fr] [Tech. Res. Inst., Snow Brand Milk Products Co. Ltd., Kawagoe, Saitama, Japan]

Textured casein was made by allowing an aged solution of 100 g casein + 2 to > 15 g dried egg white in 400 ml N NaOH to fall 5-20 cm into a coagulating solution of 0.75% HCl and 5% NaCl. The threads were adjusted to pH 5.5, washed, fixed by heating at 80° C for 1 h, and pressed. The texture ranged from chicken-like with little egg white to fish-like with the most egg white. [See FSTA (1978) 10 10P1408.] JMD

21

Thermally produced volatile basic components of egg white and ovalbumin.

Kato, Y.; Watanabe, K.; Sato, Y.

Lebensmittel-Wissenschaft und -Technologie 11 (3) 128-130 (1978) [21 ref. En] [Women's Coll. of Tokaigakuen, Hirabari, Tenpaku-ku, Nagoya 468, Japan]

The volatile basic components produced from egg white and ovalbumin heated at 120° C for 2 h at pH 10 were collected, fractionated and analysed by gas chromatography and combined gas chromatography-MS. 11 basic components were confirmed: pyridine and 2-methylpyridine, pyrazine

and 6 alkyl-substituted pyrazines and 2 alkyl-substituted thiazoles. The pyrazine group was found at a higher concn. than the pyridine group in egg white and ovalbumin. However, pyridine was a main basic volatile in the latter (26.8% of basic volatiles). Thiazoles were minor components of both. It was suggested that bound carbohydrate in the ovalbumin molecule reacted to form the basic volatiles through the nonenzymic browning reaction. AS

22

Depletion of glucose in Egyptian egg white before dehydration.

Shehab, S. K.; Darwish, N. M.; Sadek, M. A.
Nahrung 22 (1) 3-9 (1978) [13 ref. En, de, ru]
[Dep. of Nutr. & Food Chem., Coll. of Women, Ain Shams Univ., Heliopolis, Cairo, Egypt]

Studies were conducted on removal of glucose from egg white by (i) fermentation with Streptococcus lactis, (ii) fermentation with Aerobacter aerogenes, (iii) fermentation with Saccharomyces cerevisiae, or (iv) enzymic oxidation using a fungal glucose oxidase preparation (containing catalase). Effects of added yeast extract on the efficiency of glucose elimination by microbial fermentation were also studied. Tables and graphs of results are given. (i) fully eliminated glucose in 9 h at pH 6.0 and 30° C if 0.2% yeast extract was added; without added yeast extract, only partial elimination of glucose was achieved. Fermentation by (i) resulted in objectionable changes in odour and appearance of the egg white. (ii) fully eliminated glucose during fermentation at pH 7.0 and 37° C for 3-4 h. (iii) fully eliminated glucose in 9 h at pH 6.0-7.5 and 32° C in the presence of 0.2% yeast extract. (iv) gave complete elimination of glucose if glucose oxidase was added at 3.8 units/100 ml egg white, and the mixture was held for 8 h at pH 7.3 and 14.5° C. (ii), (iii) and (iv) did not adversely affect the odour or appearance of the product. AJDW

23

Technological evaluation of dried egg white prepared by different techniques.

Darwish, N. M.; Sadek, M. A.
Nahrung 22 (1) 11-17 (1978) [12 ref. En, de, ru]
[Dep. of Nutr. & Food Chem., Coll. of Women, Ain Shams Univ., Heliopolis, Cairo, Egypt]

Studies were conducted on the technological characteristics of spray-dried or pan-dried egg white, previously desugared by (i) fermentation with Streptococcus lactis, (ii) fermentation with Aerobacter aerogenes, (iii) fermentation with Saccharomyces cerevisiae or (iv) enzymic oxidation using glucose oxidase. An imported dried egg white sample was used as a control. Characteristics studied were pH, foaming capacity, and quality of angel food cakes made using the various dried egg whites. Tables of results are given. Of the non-dried samples, foaming capacity and foam stability were best for egg white without glucose removal, followed by (iii). Foaming capacity decreased during drying, except for (iv); the reduction in foaming capacity during drying was greatest for the sample without glucose removal. Of the dried samples, (iii) gave the most stable and (iv) the least stable foam. Pan-drying gave similar foaming capacity and foam stability to spray-drying. pH decreased as a result of glucose elimination (the decrease being greatest for (iv) and least for (i) samples); however, pH increased to values greater than or equal to the original level during drying. Studies on the quality of cakes made with the various egg white samples showed that fresh egg white gave the highest and (ii) the lowest scores for specific vol., texture, tenderness and overall acceptability; (iv) gave the highest and (ii) the lowest scores for flavour. AJDW

24

The influence of pH, temperature, and proteins on the electrophoretic, thermal, textural, and elastic properties of model meat analogs.

Rizvi, S. S. H.
Dissertation Abstracts International, B 37 (8) 3850-3851:Order No. 77-2487 (1977) [En]
[Ohio State Univ., 190 North Oval Drive, Columbus, Ohio 43210, USA]

Meat analogues were prepared from spun soy fibre, egg albumin and wheat gluten, and influence of composition of analogues and pH and heat treatment was studied. Increased temp. and pH increased brown background colour and gel-like appearance. Brown particle colour and particle number increased with gluten level in the product; particle size decreased as egg albumin content increased. Increase in spun soy fibre content increased fibrous appearance. Thermal diffusivity values increased with temp. from 82.2° to 93.3° C for the same water content. Increase of water content significantly increased thermal diffusivity at these temp., but not at higher temp. Hardness, gumminess and chewiness were exponentially correlated with egg albumen content, pH, and their interaction. Elasticity increased with gluten content; cohesiveness depended on albumin level. Degree of elasticity and apparent elasticity modulus increased with albumin level, pH, and temp. Mechanical hysteresis loss increased with pH. SDS polyacrylamide gel electrophoresis showed that SS links were broken at $\leq$82.2° C, and aggregation involving SS bonding started at 93.3° C, increasing with temp. and being accelerated at extreme pH. DIH

EGG YOLK

1

Studies on the apoproteins of the major lipoprotein of the yolk of hen's eggs. I. Isolation and properties of the low-molecular-weight apoproteins.
Burley, R. W.
Australian Journal of Biological Sciences **28** (2) 121-132 (1975) [17 ref. En] [Div. of Food Res., CSIRO, PO Box 52, North Ryde, NSW 2113, Australia]

2

Studies on the apoproteins of the major lipoprotein of the yolk of hen's eggs. II. The dimer-tetramer transition of apovitellenin I.
Burley, R. W.; Davies, W. A.
Australian Journal of Biological Sciences **29** (4) 317-323 (1976) [5 ref. En] [Div. of Food Res., CSIRO, PO Box 52, North Ryde, NSW 2113, Australia]

3

The effect of pasteurisation and freezing on the low density lipoproteins of egg.
Parkinson, T. L.
Journal of the Science of Food and Agriculture **28** (9) 806-810 (1977) [8 ref. En] [Flour Milling & Baking Res. Ass., Chorleywood, Rickmansworth, Herts WD3 5SH, UK]

The low density fraction of egg yolk was separated by gel filtration into 2 groups of lipoproteins. (i) had an extremely high mol. wt. and was probably formed by aggregation of the 2nd group (ii) which itself had a high mol. wt. In liquid egg the ratio (i):(ii) was increased by pasteurization for 5 min at 65° C and also by freezing and thawing of either raw or pasteurized material. When (ii) was isolated by gel filtration and then frozen and thawed it was converted to (i).
AS

4

Primary structure of apovitellenin I from hen egg yolk and its comparison with emu apovitellenin I.
Dopheide, T. A. A.; Inglis, A. S.
Australian Journal of Biological Sciences **29** (3) 175-180 (1976) [10 ref. En] [Div. of Protein Chem., CSIRO, Parkville, Victoria 3052, Australia]

5

Lipid-protein globules of avian egg yolk. Isolation and properties of globules stable in concentrated sodium chloride solution.
Vadehra, D. V.; Bain, J. M.; Burley, R. W.
Biochemical Journal **166** (3) 619-624 (1977) [22 ref. En] [CSIRO Div. of Food Res., Box 52, North Ryde, NSW 2113, Australia]

6

Flavor sensitivity for chloroanisoles in coagulated egg yolk.
Frijters, J. E. R.; Bemelmans, J. M. H.
Journal of Food Science **42** (4) 1122-1123 (1977) [15 ref. En] [Inst. for Poultry Res., 'Het Spelderholt', Min. of Agric. & Fisheries, Beekbergen, Netherlands]

A number of tri- and tetrachloroanisoles as well as pentachloroanisole are known to be associated with mustiness in eggs and broilers. The flavour thresholds in coagulated egg-yolk were determined for the various isomers of these compounds in order to establish the concn. levels at which the flavour of eggs is affected. For 2,3,6- and 2,4,6-trichloroanisole, 2,3,4,6-tetrachloroanisole and for pentachloroanisole the thresholds were 1.2×10^{-1}, 2.4×10^{-3}, 2.7×10^{-2} and 2.8 mg/kg resp., whereas those for the other isomers were > 10 mg/kg. These flavour thresholds were at least 1000 × higher than odour thresholds reported for solutions in water. IFT

7

Microstructure of egg yolk.
Chang, C. M.; Powrie, W. D.; Fennema, O.
Journal of Food Science **42** (5) 1193-1200 (1977) [35 ref. En] [Dep. of Food Sci., Univ. of Wisconsin, Madison, Wisconsin 53706, USA]

The particulate matter of fresh, infertile egg yolk was studied using transmission electron microscopy. Granules in electron micrographs appeared to be composed of electron-dense subunits. Treatment of granules with 0.34M NaCl removed a considerable amount of matrix particles, and, as a result, subunits each consisting of a large globule overlaid with protein strands having attached electron-dense micro-particles were observed. The structure of the granules was disrupted completely by 1.71M NaCl treatment. Ultracentrifugation of granules in 1.71M NaCl gave 5 fractions (2 floating and 3 sedimenting). The uppermost floating fraction, a semisolid pellicle, was made up of small and large globules with diam. 30-100 nm. The subpellicle floating fraction consisted only of small globules with diam. about 27 nm and numerous myelin figures. The 3 sedimenting fractions appeared to be made up of protein strands with attached microparticles (presumably lipovitellins). The plasma was made up predominantly of small globules, low density lipoprotein (LDL) micelles, which had mottled surfaces but some myelin figures were also present. The median diam. of the globules was about 23 nm, with a range of 13-50 nm. Small electron-dense particles, designated ultraparticles, noted on the surfaces of LDL micelles of plasma, were released from the LDL surfaces with pepsin. Ultraparticles were also noted on surfaces of globule in granules. IFT

8

Genetic analysis of chicken egg yolk cholesterol.
Becker, W. A.; Spencer, J. V.; Verstrate, J. A.; Mirosh, L. W.
Poultry Science **56** (3) 895-901 (1977) [13 ref. En] [Washington State Univ., Pullman, Washington 99163, USA]

Figures are given for (i) wet yolk wt., (ii) dry yolk wt., (iii) yolk moisture and (iv) yolk cholesterol content for eggs from White Leghorn pullets. Selection for low cholesterol (dry wt. basis) did not produce a significant decrease in cholesterol content ($P > 0.05$). Pooled means of 5 random mated generations were: (i) 14.52 g, (ii) 7.48 g, (iii) 7.04 g and (iv) 30.36 mg/g dry yolk, equivalent to 225.73 mg/yolk. JRR

9

Study on the yolk pigments of chicken eggs and the improvement of yolk colour. (In 'Proceedings of the 20th World Veterinary Congress' [see FSTA (1978) **10** 3G126].) [Lecture]
Panetsos, A. G.; Kilikidis, S. D.; Psomas, J. E.
1, 1037-1043 (undated) [24 ref. En] [Dep. of Food Hygiene, Aristotelian Univ., Thessaloniki, Greece]

A total of 40 White Leghorn hens (15 months of age at the start of the experiment) was used in a study on effects of supplementation of the diet with sweet red pepper on yolk colour and carotenoid pigment content. 4 diets were tested: (i) control (no red pepper fed); (ii) with 1% red pepper (containing 0.110 g carotenoids/100 g pepper); (iii) with 1% red pepper (containing 0.222 g carotenoids/100 g pepper); and (iv) with 2 g red pepper (containing 0.222 g carotenoids/100 g pepper). Diets (i), (ii) and (iii) were fed up to the 65th day of the experiment; diet (iv) was fed up to the 46th day. Tables and graphs of data are given for the colour (Lovibond units) and carotenoid content of yolks of eggs laid by hens fed the various diets. Red pepper supplements significantly increased yolk colour intensity, as compared to (i), by (ii) 42.1%, (iii) 83.5% and (iv) 120.9%. Values for yolk carotenoid concn. were, for (i), (ii), (iii) and (iv) respectively (μg/100 g, β-carotene equivalent): total carotenoids 1722, 2239, 2759 and 3970; xanthophylls 1577, 1822, 2224 and 2985; carotenes 151, 177, 209 and 232; capsanthin 0, 134, 247 and 598; and capsorubin 0, 76, 108 and 289. Vitamin A concn. in yolks of eggs laid by hens fed (i), (ii) and (iii) did not differ significantly; (iv) yolks contained 7.2% less vitamin A than (i) yolks. AJDW

10

Study on the polar lipids of egg yolk. (In 'Proceedings of the 20th World Veterinary Congress' [see FSTA (1978) **10** 3G126].) [Lecture]
Kilikidis, S. D.
1, 859-868 (undated) [6 ref. En] [Dep. of Food Hyhiene, Vet. Fac., Aristotelian Univ., Thessaloniki, Greece]

The total polar lipids were separated from egg yolk by the method of Rhodes & Lea [Biochemical Journal (1957) 65, 526], separated by TLC and determined by densitometry; fatty acid compositions of the individual fractions were determined by GLC. Tables and chromatograms of results are given. Mean values for the % various polar lipid fractions were: lecithin 60.34; cephalin 26.64; sphingomyelin 3.69; phosphatidyl inositol 2.20; lysolecithin 1.77; plasmalogen 2.10; cerebroside fraction A 1.40; and cerebroside fraction B 1.60. AJDW

11

A note on egg-yolk fatty acids of different breeds of chickens and their crosses.
Chawla, J. S.; Lodhi, G. N.; Ichhponani, J. S.
Indian Journal of Animal Sciences **44** (10) 799-800 (1974, publ. 1977) [9 ref. En] [Punjab Agric. Univ., Ludhiana, Punjab, India]

Laying hens of the breeds (i) White Leghorn (WLH), (ii) Rhode Island Red (RIR), (iii) their cross (WLH × RIR) and (iv) back-cross (WLH × (WLH × RIR)) were fed on a low fat diet for 1 month. Egg yolks of 10 eggs from each group were extracted and fractionated into polar and neutral lipid groups. Results for (i), (ii), (iii) and (iv) resp. show total saturated lipid 34.53, 29.89, 32.46 and 33.57%; unsaturated lipid 65.47, 70.11, 67.54 and 66.43%; total saturated neutral lipids 31.93, 28.17, 31.24 and 34.71%; total unsaturated neutral lipids 68.07, 71.83, 68.76 and 65.29%; total saturated polar lipids 48.14, 47.96, 48.92 and 45.46%; and total unsaturated polar lipids 51.86, 52.04, 51.08 and 54.54. The breeds studied had similar patterns of fatty-acid distribution in the egg-yolk lipids fractions. Polyunsaturated fatty acids were mainly concn. in the neutral fraction of the lipids. Stearic acid concn. was higher in the polar than the neutral fraction. SP

12

Lipoxygenase activity and water activity in systems of low water content.
Brockmann, R.; Acker, L.
Annales de Technologie Agricole **26** (2) 167-174 (1977) [5 ref. En, fr] [Inst. für Lebensmittelchem., Univ. Münster, Piusallee 7, D-4400 Münster, Federal Republic of Germany]

Studies were conducted on the dependence of lipoxygenase-catalysed oxygenation of lipids on the water activity, using a model system comprising cellulose impregnated with a lipoxygenase-active aqueous extract from yellow soybeans, then freeze-dried. Sunflower oil or fatty acids served as substrates. The enzyme preparation/substrate mixtures were held for ≤approx. 400 h at 25°C, at various RH over the range 5-65%. Lipid oxygenation was determined by measurement of optical density at 234 nm. Graphs of results are given. The results show that lipoxygenase-induced oxygenation increased with increasing RH; however, appreciable oxygenation occurred even at very low RH. Enzymic oxygenation, even at low RH, was considerably faster than autoxidation. Enzymic oxygenation of soybean phospholipids was found to be greater than that of egg yolk phosphatidyl choline. AJDW

13

Color measurement of egg yolks - an instrumental method.
Philip, T.; Weber, C. W.; Berry, J. W.
Poultry Science 56 (4) 1305-1309 (1977) [8 ref. En] [Dep. of Nutr. & Food Sci., Univ. of Arizona, Tucson, Arizona 85721, USA]

A rapid, instrumental method of measuring egg yolk colour for routine quality control is described. The method utilizes the Hunter D25 Color and Color Difference Meter, and is comparable in speed and accuracy to that of the visual method. Egg yolks ranging in colour from light yellow to red were obtained by incorporating crystalline lutein, β-apo-8'-carotenal and canthaxanthin at different levels in the layer feed. The instrumental redness (a values) and hue ($\tan^{-1}$b/a) both gave correlation coeff. of 0.93 with visual scores obtained with the Roche Color Fan. AS

14

Isolation and fractionation of the protein moiety of egg yolk low density lipoprotein.
Nakamura, R.; Hayakawa, M.; Sato, Y.
Poultry Science 56 (4) 1148-1152 (1977) [21 ref. En] [Lab. of Food Sci. & Tech. (Anim. Products), Fac. of Agric., Nagoya Univ., Nagoya, Japan]

The protein moiety of egg yolk low density lipoprotein (LDL) was a mixture of glycoproteins which was separated into several bands by gel electrophoresis. The main component was a large protein of 130 000 mol. wt. and represented over 70% of the total proteins. Among other components, the smallest protein made up about 20% of total proteins and had a mol. wt. of 15 000. Remaining components included at least 4 proteins with mol. wt. in the range of 60 000-95 000. The main protein and the smallest protein could be separated from other components by gel filtration on Sepharose 4B. Although their amino acid composition was almost the same, their carbohydrate content was different. Other components besides these 2 proteins were assumed to be derived from the main protein during delipidation. AS

15

A large-scale purification of phosphatidylethanolamine, lysophosphatidylethanolamine, and phosphatidylcholine by high performance liquid chromatography: a partial resolution of molecular species.
Fager, R. S.; Shapiro, S.; Litman, B. J.
Journal of Lipid Research 18 (6) 704-709 (1977) [12 ref. En] [Dep. of Physiol., Univ. of Virginia Med. School, Charlottesville, Virginia 22901, USA]

Egg yolk phospholipids, on a 10 g scale, were resolved by high-performance liquid chromatography on an 8-m silica column with elution by a stepwise chloroform-methanol gradient into homogeneous phosphatidylcholine, phosphatidylinositol, phosphatidylethanolamine, and lysophosphatidylethanolamine fractions. Within these fractions, partial resolution on the basis of fatty acyl side-chain composition was achieved. AS

16

Comparison of the protein components of hen's egg yolk low density fraction of granules (LDFG) and low density fraction (LDF).
Ramakrishna Rao, D. N.; Mahadevan, S.
Current Science 46 (18) 604-605 (1977) [6 ref. En] [Dep. of Biochem., Indian Inst. of Sci., Bangalore 560012, India]

Preliminary experiments have shown that the protein components of hen's egg yolk LDFG from White Plymouth Rock egg and VLDL (very low density lipoprotein, also called LDF) from White Leghorn egg are similar. AL

17

Phosphorus-31 Fourier transform nuclear magnetic resonance spectroscopy as a tool for trace analysis of phosphorus compounds.
Gurley, T. W.
Dissertation Abstracts International, B 37 (12) 6079-6080: Order No. 77-11989, 155pp. (1977) [En] [Case Western Reserve Univ., Cleveland, Ohio, USA]

^{31}P Fourier transform NMR spectroscopy was studied as a means of detecting, characterizing and quantifying inorganic and organic P compounds at the p.p.m. level. Various techniques were used to increase the inherently low sensitivity of the technique, including pulse Fourier transform capability, use of a large sample tube (12 mm) and the use of paramagnetic relaxation reagents. The optimum conditions (especially solvent and relaxation reagent) were determined for each family of P compounds (inorganic, organophosphorus and nucleotides) in model solutions at low concn. in a 25-min experiment. The detection limit was approx. 10 p.p.m. The technique was then applied to water, egg yolk and milk samples. As well as inorganic P compounds, phospholipids and phosphoproteins (e.g. casein) were determined quantitatively at low p.p.m. concn. DIH

18

[Utilization of protein extracted from lucerne.]
Truchetto, M.
Industries de l'Alimentation Animale No. 12, 23-26 (1977) [Fr]

This paper on a lucerne leaf-protein isolate 'PXI', which contains approx. 50% protein, 500 p.p.m. carotene and 1000 p.p.m. xanthophylls, includes data showing the effects of diets containing PXI on the skin pigmentation of broilers and the yolk colour of eggs. The results show that addition of >4.5% PXI to the diet considerably improved the skin pigmentation of broilers; the yolk colour intensity of eggs laid by hens fed diets containing 1.5-6.0% PXI increased with increasing level of PXI in the diet. AJDW

19

Studies on the gelation of egg yolk and plasma upon freezing and thawing.

Chang, C. H.; Powrie, W. D.; Fennema, O.

Journal of Food Science 42 (6) 1658-1665 (1977) [20 ref. En] [Dep. of Food Sci., Univ. of Wisconsin, Madison, Wisconsin 53706, USA]

With the aid of viscometry, turbidimetry, paper electrophoresis, and electron microscopy, more insight into the gelation of yolk upon freezing and thawing has been gained. The pseudoplastic nature of yolk and plasma was found to be enhanced by freezing for a few h at -14° C. With a rise in temp. from 10° to 50° C, the apparent viscosities of frozen-thawed yolk and plasma decreased considerably, whereas little viscosity change was obtained with unfrozen samples. During the freezing process, low-density lipoproteins (LDL) of the yolk presumably interacted through at least some heat-labile bonds (perhaps H bonds) to produce a more viscous, pseudoplastic mass. The results of paper electrophoresis of unfrozen and frozen (-10° and -14° C)-thawed yolk and plasma suggested that LDL aggregates were formed during frozen storage. Turbidity experiments supported this supposition. As in the case of yolk, the rate of viscosity change for plasma increased with a drop in the frozen storage temp. from -10° to -14° C. The loss of LDL mobility during paper electrophoresis was also related to the storage temp. The higher LDL micelle content and soluble salt concn. may account for this temp. effect. The gelation rate for plasma increased progressively as the granule content was raised to 20% of the TS of the dispersion. Possibly the granules of yolk are disrupted during the freezing by a high concn. of soluble salts in the unfrozen phase and, thereafter, LDL micelles are liberated. In electron micrographs of frozen-thawed yolk, a large lipid mass and some fluffy electron-dense masses, smaller than the granules in native yolk, were observed. These fluffy masses are presumably residues of completely disrupted granules. IFT

20

Effect of litter condition, antibiotics, barley and lucerne meal on egg yolk colour and performance of crossbred layers.

Karunajeewa, H.; Bagot, I.

Australian Journal of Experimental Agriculture and Animal Husbandry 17 (89) 926-933 (1977) [15 ref. En] [Dep. of Agric., Werribee, Victoria, Australia]

Groups of White Leghorn × Australorp hens were used in studies on factors influencing laying performance and egg yolk colour. Variables studied were: dietary lucerne meal (≤6%); use vs. non-use of an antibiotic mixture (20 p.p.m. chlortetracycline, 10 p.p.m. procaine penicillin and 338 p.p.m. formosulphathiazole); dietary cereals (wheat + oats vs. wheat + barley); and litter type (wet vs. dry). The results show that addition of lucerne meal to the diet or rearing on wet litter increased and barley-based diets decreased yolk colour intensity. Haugh score was improved by use of barley-based diets, or by housing the birds on dry litter; it was depressed by feeding antibiotics to birds on wet litter. AJDW

21

Composition of and cholesterol in Araucana and commercial eggs.

Peterson, D. W.; Lilyblade, A.; Clifford, C. K.; Ernst, R.; Clifford, A. J.; Dunn, P.

Journal of the American Dietetic Association 72 (1) 45-47 (1978) [7 ref. En] [Dep. of Avian Sci., Univ. of California, Davis, California, USA]

Araucana eggs ('blue' eggs of Araucana chickens) from 6 sources and commercial-type white eggs of 2 major supermarket brands and from the University of Calfornia flock were collected and analysed for cholesterol content of the yolk. Cholesterol content ranged (%): Araucana - wet yolk, 1.23-1.63, dry yolk, 2.53-3.23; Commercial - wet yolk, 1.13-1.20, dry yolk, 2.22-2.43. Contrary to popular belief, the yolks of Araucana eggs were significantly higher in cholesterol than those of commercial white eggs. VJG

22

Effects of source and level of fat in the hen's diet on the deposition of dietary oxycarotenoids in egg yolks.

Abu-Serewa, S.

Australian Journal of Experimental Agriculture and Animal Husbandry 16 (79) 204-208 (1976) [14 ref. En] [Dep. of Agric., Werribee, Victoria, Australia]

576 White Leghorn × Australorp hens were used in a study on effects of fat supplements (stabilized tallow and/or bleached sunflower oil), each fed at 0, 2 or 4% of the diet, on the deposition of dietary oxycarotenoids in the yolk fat. The diets were supplemented with a 3:2 mixture of the ethyl ester of β-apo-8'-carotenoic acid and canthaxanthin, at a level of 22 mg/kg diet. The hens received the experimental diet for approx. 1 yr, starting at 24 wk of age. Tables of results are given for the colorimetrically-and visually-evaluated colour scores of the egg yolks. The results show that yolk colour intensity (evaluated by both methods) increased significantly with increasing concn. of stabilized tallow in the diet. Visually-evaluated colour score increased significantly with increasing level of sunflower oil in the diet; effects on colorimetrically-evaluated colour were significant only for 4% added sunflower oil. Yolk colour of eggs from hens fed 4% animal tallow was more intense than that of eggs from hens fed 2% tallow + 2% sunflower oil, or those of eggs from hens fed 4% sunflower oil. Eggs laid by hens fed 4% tallow + 4% sunflower oil had the most intense yolk colour of any of the treatments tested. AJDW

23

[Study of egg yolk lipids using thin layer chromatography on Silufol plates.]
Berezovskaya, M. P.; Ponomarev, E. Yu.; Tyurina, N. V.
Nauchnye Trudy, Omskii Ordena Lenina Sel'skokhozyaistvennyi Institut imeni S. M. Kirova **152**, 91-92, 118 (1976) [4 ref. Ru] [Omskii Sel'skokhoz. Inst., Omsk, USSR]

Egg yolks were extracted with chloroform/ethanol (2:1), water-soluble compounds were removed by phase separation after addition of KCl solution, and lipids were fractionated by TLC on Silufol. 6 fractions identified respectively as phospholipids, monoglycerides, diglycerides, cholesterol, free fatty acids and triglycerides were obtained. It was found in tests on eggs of 28 individually kept White Leghorn hens that proportions of the 6 constituents were not influenced by contents of carotenoids in eggs, and did not differ significantly between hens. No values are quoted. SKK

24

Metabolism of linoleate versus linoelaidate in the laying hen.
Lanser, A. C.; Mounts, T. L.; Emken, E. A.
Lipids **13** (2) 103-109 (1978) [42 ref. En] [N. Regional Res. Cent., USDA, Peoria, Illinois 61604, USA]

The metabolic fate in the laying hen of linoelaidic acid, the trans, trans-geometric isomer of linoleic acid, was compared to that of the naturally occurring cis, cis-linoleate. In 2 experiments, mixtures of radioisotope-labelled linoleate and linoelaidate were orally administered to a set of 3 laying hens. A third mixture consisting of linoleate-^{3}H and linoleate-^{14}C was fed to 3 hens to measure biological isotope effects. Isotope ratios ($^{3}H/^{14}C$) of the neutral lipid and phospholipid fractions isolated from egg yolks and of the octadecadienoic acids from these fractions were compared to those of the administered mixtures. The $^{3}H/^{14}C$ ratios indicate that linoelaidic acid and linoleic acid are equally incorporated into egg yolk neutral lipids and phospholipids. Arachidonic acid was found exclusively in the phospholipid fraction and was radiolabelled with the isotope from the cis,cis octadecadienoate isomer only. Further detailed analysis of individual neutral lipid components indicated: discrimination against the trans, trans isomer in cholesteryl esters and no discrimination against either isomer in triacylglycerols. AS

25

[Effects of dietary maize meal or lucerne meal on the carotenoid content of egg yolk.]
Mikolasek, A.; Mader, P.; Kozeny, V.
Sbornik Vysoke Skoly Zemedelske v Praze, Fakulta Agronomicka, B No. 1, 129-139 (1977) [12 ref. Cs, en, ru] [Katedra Biol. Zakladu Rostlinne Vyroby, Vysoka Skola Zemedelska, Prague-Suchdol, Czechoslovakia]

50 Ross hybrid hens were fed diets with or without 30% maize meal and/or 3 or 6% lucerne meal. Tables of results are given for carotenoid concn. (determined by spectrophotometry) in the yolks of eggs laid by these hens. The results show that addition of lucerne meal alone resulted in higher yolk carotenoid concn. than addition of maize meal alone. However, addition of lucerne meal + maize meal gave the highest carotenoid concn. in the yolk. [From En summ.] AJDW

26

Egg yolk extender.
Chess, W. B. (Stauffer Chemical Co.)
United States Patent 4 072 764 (1978) [En]

An egg yolk extender comprises a mixture of full fat soy flour, a grain flour, lecithin, a second emulsifier, and a humectant. IFT

27

[Food and incubation quality of eggs in relation to the egg formation time.]
Smetnev, S. I.; Pel'tser, S. O.; Mamontova, I. V.
Doklady TSKhA [Sel'skokhozyaistvennaya Akademiya imeni K. A. Timiryazeva] No. 215, 105-108 (1976) [Ru]

As part of long-term studies (beginning in 1974), it was established with Leghorn and Moscow hens that the content of vitamin A was 6-19% lower in the yolk of eggs from high-laying hens than from low-laying hens. HBr

28

Isolation of myelin figures and low-density lipoproteins from egg yolk granules.
Garland, T. D.; Powrie, W. D.
Journal of Food Science **43** (2) 592-597 (1978) [27 ref. En] [Dep. of Food Sci., Univ. of British Columbia, Vancouver, British Columbia V6T 1W5, Canada]

The granules of egg yolk were disrupted with 1.71M NaCl and separated into 2 floating and 3 sedimenting fractions on ultracentrifugation. The pellicle (FI) and subpellicle (FII) fractions contained most of the granular low-density material. A minor amount of low-density lipoproteins was trapped physically within the high-density matrix of sedimenting fractions. FII was particularly rich in myelin figures and uniformly-sized granule low-density lipoproteins. Ultrafiltration, dextran sulphate-lipoprotein complexing and gel filtration techniques were evaluated for their ability to separate these 2 FII components in the purified form. Electron microscopy was used to assess fraction purity and the structural integrity of the particles. Sepharose 2B gel filtration was considered the best method of isolation. IFT

29

[Contents of DDT, DDE, DDD and HCH in eggs of different breeds of geese.]
Smoczynski, S.; Faruga, A.; Markiewicz, K.;

Majewska, T.
Zeszyty Naukowe Akademii Rolniczo-Technicznej w Olsztynie No. 173 (Technologia Zywnosci 11), 141-147 (1977) [16 ref. Pl, ru, en] [Inst. Fizyki i Chemii Zywnosci, ART, Olsztyn, Poland]

50, 54, 52, 36 and 54 eggs resp. were taken during 1 Feb.-15 June 1975 at random from groups of 48 Pomorska, Zatorska, White Italian, and Lubelska geese and a group of 24 Suwalska geese, all aged 1-4 yr. Mean values tabulated for DDT, DDD, DDE and α- plus γ-HCH (BHC) contents include the following ranges resp.: 0.15-0.20, 0.03-0.04, 0.04-0.06 and 0.01-0.02 mg/kg egg yolk fat; none of the breed differences were significant. For 18 eggs from 1-yr-old geese, 88 from 2-yr-old, 88 from 3-yr-old and 52 from 4-yr-old, mean DDT contents were resp. 0.23, 0.19, 0.15 and 0.14 mg/kg egg yolk fat. The difference between 1-yr-old and 4-yr-old geese was significant; corresponding differences for DDD, DDE and BHC were not. SKK

30

Simultaneous extraction and preparative fractionation of egg yolk lipids using the principle of adsorption.
Ramesh, B.; Prabhudesai, A. V.; Viswanathan, C. V.
Journal of the American Oil Chemists' Society 55 (5) 501-502 (1978) [9 ref. En] [Lipid Res. Lab., 8 Indrayani Flats A, Prabhat Road Lane 15, Poona 411 004, India]

A new approach for the simultaneous extraction and preparative fractionation of egg yolk lipids is described, and is a method which can be extended to other tissues. In this method, egg yolk is adsorbed on activated TLC grade silicic acid and sequentially extracted with different solvents to get a crude fractionation of its lipids into nonpolar and polar components. These crude concentrates help achieve larger yields of high purity lipids/unit column load during subsequent chromatographic subfractionation. AS

31

Genetic parameters associated with cholesterol in egg yolk and blood serum of the chicken. [Thesis; 94pp.]
Ali, N. M.
Dissertation Abstracts International, B 38 (4) 1548: Order No. 77-20345 (1977) [En] [Texas A&M Univ., College Station, Texas 77843, USA]

32

Effect of triticale, lucerne pellets, furazolidone, ethoxyquin and oxycarotenoids on egg yolk colour and performance of crossbred layers.
Karunajeewa, H.
Australian Journal of Experimental Agriculture and Animal Husbandry 18 (92) 396-403 (1978) [25 ref. En] [Dep. of Agric., Werribee, Victoria, Australia]

Groups of 26-wk-old White Leghorn × Australorp pullets were used in a 24-wk feeding trial on effects of diets containing 5% of either lucerne meal or lucerne pellets, with or without 25 p.p.m. furazolidone and 1 p.p.m. of either canthaxanthin or β-apo-8'-carotenoic acid ethyl ester on yolk colour. Tables of results (Roche colour fan values) are given. Lucerne pellets gave significantly ($P < 0.05$) higher values than lucerne meal. Canthaxanthin gave significantly higher values ($P < 0.01$) than β-apo-8'-carotenoic acid ethyl ester. Furazolidone did not significantly influence yolk colour. In a second study, 58-wk-old White Leghorn × Australorp hens were used in a 16-wk feeding trial conducted to evaluated effects of diets based on (i) wheat, (ii) triticale, (iii) 50% triticale + 50% wheat or (iv) 50% wheat + 50% oats (all with or without 333 p.p.m. ethoxyquin) or yolk colour. A table of results is given (Roche colour fan values, and pigment concn. as β-carotene equivalent). The results show that (i) gave significantly higher Roche values than (ii) or (iii); (i) gave significantly higher pigment concn. than (ii) or (iv); and (iii) gave significantly higher pigment concn. than (ii). Ethoxyquin significantly increased pigment concn. but had no significant effect on Roche colour value. AJDW

POULTRY (General)

1

Poultry packaging.
Markert, G. H. (Maschinefabriek Markert BV)
United States Patent 4 033 088 (1977) [En]

Apparatus is described for the packaging of prepared poultry in bags so that each specimen will be positioned in the bag with legs folded and lying against the bottom side of the body. IFT

2

[Detection of sulphaquinoxaline residues in poultry meat.]
Rutczynska-Skonieczna, E. M.
Roczniki Panstwowego Zakladu Higieny 28 (1) 59-63 (1977) [12 ref. Pl, ru, en] [Zaklad Badania Zywnosci i Przedmiotow Uzytku Panstwowego Zakladu Higieny, Warsaw, Poland]

A semiquantitative TLC method was developed for detn. of sulphoquinoxaline (SQ) in poultry meat. Extraction of the compound from tissues and deproteinization of the meat extract was done using a mixture containing 30% trichloroacetic acid and 3N HCl in a 1:5 ratio. The extract was purified with ethyl ether and traces of ether were removed in an N_2 stream. The aqueous layer was brought to pH 9, and extraction of SP was done with ethyl acetate saturated with water. The acetate extract was dried with anhydrous Na_2SO_4 and conc. in an N_2 stream, the dry residue was dissolved in methanol and spread on a plate covered with silica gel G suspension in double distilled water. The chromatogram was developed in a mixture of n-hexane with acetone in a 1:1 ratio. The plate was sprayed with freshly prepared 1% solution of $NaNO_2$ in 1N HCl, and then, after drying for 5 min at 100°C, was resprayed with a 0.2% solution of β-naphthol in 0.1N NaOH. Orange-red spots appeared in the presence of SQ. The method permits detection of 0.3 mg SQ/kg meat. AS

3

Poultry neck removal.
Meyn, P.
United States Patent 4 035 867 (1977) [En]

Apparatus is described for the removal of necks of headless, plucked poultry hanging by the ankle joints from spaced hooks of an overhead conveyor. IFT

4

Poultry neck removal.
Meyn, P.
British Patent 1 473 555 (1977) [En]

See preceding abstr.

5

[Assessment of bacterial counts in the meat processing industry. II. The plate-loop and droplet methods.]
Gerats, G. E.; Snijders, J. M. A.
Tijdschrift voor Diergeneeskunde 102 (16) 975-982 (1977) [26 ref. Nl, en] [Fac. der Diergeneeskunde, Rijksuniv., Biltstraat 172, Utrecht, Netherlands]

The plate-loop and droplet methods for bacteriological examination of meat and surfaces are described. Tabulated results showed no significant differences in 150 total aerobe counts of pork and minced meat by plate-loop or pour-plate counting, in 110 total aerobe counts of pork, beef and poultry meat by droplet or pour-plate counting, and in 25 Gram-negative bacteria and Enterobacteriaceae counts of minced meat by droplet or pour-plate counting. These methods satisfy the criteria of simplicity, reliability and economy in labour and material for counts >2500 bacteria/g or /cm^2, and are suitable for routine use. [See FSTA (1977) 9 9S1065 for part I.] RM

6

[Scalding agent.] Brühmittel.
Riemer, F.
German Federal Republic Patent Application 2 542 891 (1977) [De]

Scalding agent for treating the skin of freshly slaughtered animals, especially to facilitate plucking of feathers from poultry, consists of water-soluble polyalkoxylation products of a fatty acid and/or an aliphatic alcohol with ethylene oxide and/or propylene oxide. The treatment solution, which has a DM content of approx. 36 wt.% and a pH of approx. 5-6, is added to the scalding water in a ratio of 1 kg solution/1000 l. water. Suitable fatty acids are palmitic acid, stearic acid and tall oil, and suitable aliphatic alcohols are lauryl alcohol and sperm oil alcohol. The agent preferably also contains a small amount of an anti-microbial agent, especially dodecyl-glycine hydrochloride. Use of the scalding agent ensures gentle treatment of the skins while allowing effective removal of the feathers. W&Co

7

Nitrates and nitrites in poultry products.
United States of America, Food & Drug Administration
Federal Register 42 (171, Sept. 2) 44376-44381 (1977) [En] [Washington DC, USA]

A review is given of the history of use, safety, and legal status of nitrates and nitrites in poultry products. CAS

8

Recovery of useful organic material from effluents by physicochemical means. [Lecture]
Grant, R. A.
Chemistry and Industry No. 20, 808-811 (1977) [3 ref. En] [Ecotech Systems Ltd., 145 Sterte Road, Poole, Dorset, UK]

The Ecotech process allows the recovery of protein from effluent (e.g. from slaughterhouses, poultry processing, vegetable processing) in a non-toxic form suitable for animal feeding. The process consists essentially of a flocculation reaction using a proprietary flocculant, followed by separation of

the flocculated protein plus fat from the effluent by air flotation, skimming off the sludge (to about 15% TS) and drying. Most of the fat may be recovered in a separate air flotation stage if the effluent contains exceptionally large quantities of fat. BOD and COD levels can be reduced by about 70-90%, with virtually complete removal of fat and suspended solids. The composition of a typical slaughterhouse effluent by-product, and the amino acid compositions of recovered solids from meat works effluent and of protein recovered from poultry processing effluent are given in tables. Effluent quality may be improved by further treatment by ion exchange resins (selective if desired). Protein recovered from vegetable processing effluent and rice starch factory effluent (protein about 5% of wt. of rice processed) can be used for human consumption. Applications, economics and financial benefits are discussed. Cost benefits from using the flocculation process in a typical abattoir with assumed daily effluent flow of 400 m^3 where COD is reduced by 75% and suspended solids reduced to 100 mg/l. are estimated as discharge savings of £18 550 and protein sales worth £28 000/yr. AL

9

[Effects of linear and rotary plucking units on carcass and meat quality of ducks, geese and turkeys.] Einfluss des Durchlauf- und Kreiselrupfers auf die Schlachtkörperqualität und Fleischbeschaffenheit bei Enten, Gänsen und Puten.
Gey, K.
Fleisch **31** (5) 84-86 (1977) [De] [VEB Geflügelwirtschaft Leipzig, German Democratic Republic]

Studies on the effects of plucking conditions on carcass and meat quality of ducks, geese and turkeys (60 birds of each species) are described; within each species, equal numbers of males and females were used. The birds were scalded at 54° or 62°C, then plucked in (i) linear or (ii) rotary plucking machines. After shock-cooling (8 min at 2°C), the carcass and meat quality (dressing %, incidence of damage, proportion of residual feathers, proportion of various cuts, and the grilling loss, juice retention capacity, consistency and colour of the meat) were evaluated. With the linear plucker, scalding at 54°C gave the best results with all 3 species; with the rotary plucker, scalding at 62°C gave the best results with ducks and geese. The linear plucker tended to give higher yields but poorer quality than the rotary unit. IN

10

[Effects of scald temperature and cooling procedure on quality of duck and goose meat.] Auswirkungen von Brühtemperatur und Kühlverfahren auf die Fleischbeschaffenheit bei Enten und Gänsen
Gey, K.; Pingel, H.
Fleisch **31** (7) 134-136 (1977) [De] [VEB Geflügelwirtschaft Leipzig, Sitz Mutzschen, Leipzig, German Democratic Republic]

Scald temp. of 57° and 62°C were compared, using grilling loss, juice retention, consistency and meat colour as quality indicators for carcasses either freshly slaughtered or stored for 3 months. Temp. reduction to 57°C improved all the indicators. Shock-cooling to 1°C in 8 min in a water bath resulted in water absorption (mean 6.15%) and reduction of quality; development of other cooling methods is required. Other factors studied in conjunction with scald temp. and shock cooling were sex and age at slaughter, genetic type and intensive or free-range production systems. IN

11

[Slaughtering technology and hygiene.] Schlachttechnologie und Hygiene.
Prändl, O.
Wiener Tierärztliche Monatsschrift **64** (5) 145-148 (1977) [De, en] [Vet. Med. Univ. Wien, Linke Bahngasse 11, A-1030 Vienna, Austria]

After a short historical review, the special hygiene conditions in modern slaughterhouses are discussed. In current practice, the slaughter of diseased and suspect animals constitutes a special risk of cross contamination. Modern slaughtering technique therefore demands increased examination of live animals before slaughter. In spite of extensive mechanization many operations are still wholly or partially manual, and this must be considered in regulations for prevention of meat contamination. Some problems of poultry slaughter hygiene are briefly discussed. RM

12

[Fundamentals of anatomy and topography in the technology and veterinary and sanitary examination of animal slaughter products.] Anatomo-topograficheskie osnovy tekhnologii i veterinarno-sanitarnoi ekspertizy produktov uboya zhivotnykh. [Book]
Chernyavskii, M. V.
239pp. (1977) [Ru] Moscow, USSR: Pishchevaya Promyshlennost'. Price 1.30r

This book, intended for meat industry technologists and product inspectors, contains the following chapters: Tissues and strata in the animal's body (pp. 9-42); Blood circulation system (pp. 42-45); Lymphatic system (pp. 46-49); Nerve system (pp. 50-52); Internal organs (pp. 53-56); and Anatomy and topography of the animal from the fattening viewpoint, and classification of carcass meat (pp. 57-90). A special section deals with the topography, etc. of the head (pp. 97-117), neck (pp. 127-134), thoracic cavity and front legs (pp. 137-160), ventral cavity (pp. 167-172), and external sexual organs, hind legs, and udder (pp. 186-203). A similar special section is devoted to fowl (pp. 212-226). STI

13

[Smoke concentrate used in the manufacture of poultry sausages.]
Nedeljkovic, L.; Isakov, M.; Bogojevic, M.
Tehnologija Mesa **17** (12) 372-374 (1976) [Sh,

en] [Jugoslovenski Inst. za Tehnologiju Mesa, Belgrade, Yugoslavia]

Effects of addition of 0.5, 1.0 or 1.5% 'Etol' smoke concentrate on the quality of various types of poultry sausage emulsion were studied. Addition of the smoke concentrate was found to be advantageous. 0.5% Etol gave good results with sausages intended for roasting; 1.0% Etol gave good results in heat-processed sausages. Addition of > 1.0% Etol adversely influenced quality. STI

14

[Smoke concentrate used in the manufacture of canned poultry meat.]

Isakov, M.; Nedeljkovic, L.; Bogojevic, M.

Tehnologija Mesa 17 (12) 370-372 (1976) [Sh, en] [Jugoslovenski Inst. za Tehnologiju Mesa, Belgrade, Yugoslavia]

The products studied were poultry meat paste with added bacon or chicken liver. 0.5, 1.0 and 1.5% 'Etol-8027' smoke concentrate was added to the emulsion during cutting. The pastes were filled into 150-g metal containers and sterilized at 118° C for 20-25 min. The results are promising; addition of 1.0% of the concentrate markedly improves the quality of the sterilized meat products studied. STI

15

Effluent treatment in meat and poultry processing industries. [Review]

Hopwood, D.

Process Biochemistry 12 (8) 5-8, 44, 46 (1977) [29 ref. En] [Alwatech UK Ltd., High Wycombe, Bucks. HP15 7AA, UK]

This review considers the wide range of methods available for treating effluents generated by the meat and poultry processing industries; particular emphasis is placed on the importance of choosing the method best suited, both practically and economically, to each establishment. Consideration is given to: preliminary treatment (e.g. screening), disposal onto land, lagooning, biological filtration, activated sludge processes, anaerobic biological treatment, chemical precipitation, protein recovery by precipitation with lignosulphonic acid, protein recovery by adsorption, water recovery and sludge disposal. Also discussed are the strength and flows of waste water, discharge standards, factors to be considered when selecting an effluent treatment method, and the economics of the methods. JA

16

Avoid costly bruising in broilers.

Stewart, G. D.

Queensland Agricultural Journal 100 (9) 421-428 (1974) [En]

Factors responsible for bruising are divided into 3 headings: factors over which the farmer or processor usually has no control (including genetic make-up, nutrition, and sex of bird); factors over which the farmer has some control (including equipment type, equipment management, the farmer's activities, lighting and equipment removal before catching); and factors over which the processor has some control (including catching and loading). SP

17

Poultry processing.

Gerardus Mill, M. P. van (Stork Brabant BV)

United States Patent 4 034 440 (1977) [En]

A device is described for transferring slaughtered poultry hanging by its legs on a shackle moving along one conveyor to a shackle advancing along another conveyor. IFT

18

The transfer of salmonella from poultry and calves through the food chain. (In 'Proceedings of the 20th World Veterinary Congress' [see FSTA (1978) 10 3G126].) [Lecture]

McGarr, C.; Mitchell, W. R.; Carlson, H. C.; Barnum, D. A.

1, 799-804 (undated) [En] [Dep. of Vet. Microbiol. & Immunology, Ontario Vet. Coll., Univ. of Guelph, Guelph, Ontario, Canada]

This paper gives data for the incidence of salmonellae in the poultry industry, including breeding flocks, hatcheries, broiler farms, processing plants, broiler carcasses and consumer products. Contamination of processing equipment, carcasses, etc. is attributed to introduction of salmonellae to the plant by apparently-healthy infected birds. It is suggested that elimination of salmonellae from broiler flocks would be advantageous. Antibiotic resistance of salmonellae from poultry is also discussed. A brief discussion is also given of the incidence of salmonellosis in veal calves, with reference to a table of data for the antibiotic resistance of salmonellae of bovine origin. AJDW

19

'Warmed-over' flavor in meat, poultry and fish. [Review]

Pearson, A. M.; Love, J. D.; Shorland, F. B.

Advances in Food Research 23, 1-74 (1977) [294 ref. En] [Dep. of Food Sci. & Human Nutr., Michigan State Univ., E. Lansing, Michigan, USA]

'Warmed-over' flavour (WOF, the term used to describe the rapid development of oxidized flavour in refrigerated cooked meat where a rancid or stale flavour usually becomes apparent within 48 h at 4° C) is comprehensively reviewed in meat, poultry and fish. Discussion covers classification and significance of lipids, structure of lipids, composition of animal fats (depot fats and tissue lipids), role of lipids in meat flavour, mechanisms of lipid oxidation, development of WOF (species differences, influence of deboned meat, heating, chopping and emulsifying, and effects of curing), prevention of WOF (antioxidants and chelating agents, reducing conditions, practical implications) and research needs. AL

20

Organization and practice of poultry meat inspection in the Netherlands. (In 'Proceedings of the 20th World Veterinary Congress' [see FSTA (1978) 10 3G126].) [Lecture]
Driessen, J.
1, 2365-2367 (undated) [En]

Aspects considered include: mechanization in poultry slaughterhouses, and consequent effects on hygiene; EEC requirements for poultry inspection; current poultry inspection and licensing of slaughterhouses in the Netherlands; control of poultry diseases; and problems with veterinary obstruction to trade in poultry between EEC countries. AJDW

21

Organization and practice of poultry inspection in the United States. (In 'Proceedings of the 20th World Veterinary Congress' [see FSTA (1978) 10 3G126].) [Lecture]
Mussman, H. C.
1, 2368-2370 (undated) [En]

Poultry inspection in the USA is discussed with reference to: legal requirements; ante-mortem inspection; post-mortem inspection; testing for residues of growth promotants, pesticides, antibiotics, etc.; inspection procedures; the potential for improvement of the efficiency of inspection; and enforcement of plant hygiene requirements. AJDW

22

[Additional laboratory studies as an important component of poultry meat evaluation.] Zusätzliche Laboruntersuchung als wesentlicher Bestandteil der Geflügelfleischbeurteilung. (In 'Proceedings of the 20th World Veterinary Congress' [see FSTA (1978) 10 3G126].) [Lecture]
Beck, G.
1, 2371-2373 (undated) [De]
[Landesuntersuchungsamt für das Gesundheitwesen Südbayern, Oberschleissheim, Federal Republic of Germany]

The value of bacteriological, virological, serological and histological laboratory investigations in poultry meat inspection is discussed. Aspects considered include: the potential improvement in productivity; the need to maximize protection of slaughterhouse personnel and consumers against health hazards; the importance of laboratory methods in diagnosis of poultry diseases transmissible to humans (with special reference to salmonellosis, fowl pest, ornithosis, and rabies); and testing for residues of drugs and pesticides. AJDW

23

[Poultry. A modern food.] Geflügelfleisch. Ein modernes Nahrungsmittel. [Conference proceedings]
World Poultry Science Association
Fleischwirtschaft **57** (10) 1797-1798, 1800-1802 (1977) [De]

The following lectures were given at the Third European Poultry Symposium of the WPSA, on May 11, 1977 at Grub near Munich: Progress in poultry processing, by M. Jul (pp. 1797-1798, De); Organization of German poultry production industry, by E. Nell (p. 1798, De); Marketing channels of the German poultry industry, by W. Klunker (pp. 1798 and 1800, De); Production of broiler meat, by E. Niemann (p. 1800, De); Turkey products, by G. Leckner (p. 1801, De); and The situation in the Bavarian poultry production and slaughtering sector, by R. Schöpfel (pp. 1801-1802, De). RM

24

[Fatty acid composition of kidney fat of duck broilers.]
Markiewicz, K.; Jaworski, J.; Smoczynski, S.
Zeszyty Naukowe Akademii Rolniczo-Technicznej w Olsztynie No. 164 (Technologia Zywnosci 10) 77-83 (1976) [12 ref. Pl, ru, en] [Inst. Fizyki i Chemii Zywnosci, ART, Olsztyn, Poland]

Fat rendered at 95°C from the kidney fat tissue of 10 duck broilers selected at random from each of 9 batches of 700-900 birds delivered to an Olsztyn poultry factory by 9 different producers was analysed by GLC. Mean values with ranges are tabulated for C14:0, C16:0, C18:0, C16:1, C18:1, C18:2, C18:3, and C20:1 fatty acid contents in the 9 groups of birds. In comparison with chicken broiler fat, the fats were characterized by much lower contents of linoleic acid and higher contents of oleic acid. SKK

25

The deterioration of duck meat during storage as investigated for free amino acid nitrogen and organoleptic characteristics.
El-Gammal, A. M.; Pingel, H.
Beiträge zur Tropischen Landwirtschaft und Veterinärmedizin **15** (2) 165-171 (1977) [10 ref. En, de, ru, fr, es] [Fac. of Agric., Assiut Univ., Assiut, Egypt]

The carcasses of 8-wk old Peking ducks were stored in the refrigerator at +5°C for ⩾21 days and analysed for free amino acid N in breast, thigh and drumstick muscles and organoleptic properties of fresh and cooked meat. Tabulated results showed that free amino acids reached a max. after 11 days' storage (196.0-318.7 mg/g fresh wt.) followed by a fall, with significant linear and quadratic trends. The fresh meat was rejected after 9 days' storage due to off odour at 202, 179 and 159 mg/g free amino acids in the breast, thigh and drumstick meat, resp. The flavour of the grilled or boiled meat indicated deterioration after 11 days. At this time slime appeared on the carcasses, but no visual growth of yeasts or moulds was observed. The effect of time on odour and flavour showed a highly significant linear (but not quadratic) trend. RM

26

[Legal aspects of manufacture, sale and processing of freeze-dried meat.] Herstellung, Vertrieb und Verarbeitung von gefriergetrocknetem Fleisch aus der Sicht des Lebensmittelrechts.
Linke, H.
Fleischerei **28** (5) 84-86 (1977) [De]
[Bundesanstalt für Fleischforschung, Oskar-von-Miller-Strasse 20, D-8650 Kulmbach, Federal Republic of Germany]

Legislation covering freeze-dried meat in the Federal Republic of Germany is discussed. Most regulations for fresh meat are also applicable to freeze-dried meat. Regulations for import of meat may, however, cause difficulties, e.g. with evaluation of meat samples, and testing of freeze-dried pork for trichinae. Under the current regulations, freeze-dried raw poultry meat may not be imported, as it does not fall within the legal definitions of either fresh or processed poultry.
AJDW

27

[Applications of neutron activation analysis in food chemistry.] Anwendungsmöglichkeiten der Aktivierungsanalyse in der Lebensmittelchemie.
Szabo, A.; Gundorin, A. N.; Meister, S.
Lebensmittel-Industrie **24** (7) 299-302 (1977)
[21 ref. De, en, ru] [Inst. for Inspection of Foods, Györ, Hungary]

Neutron activation analysis of foods is discussed, with reference to: basic principles of the method; radiation sources; equipment; sensitivity; and applications in food chemistry. Tables of data are given showing concn. of various elements in whisky, poultry, dried tomatoes and canned foods.
AJDW

28

Bacterial hazards. [Lecture]
Gilbert, R. J.; Roberts, D.
Proceedings of the Nutrition Society **36** (1) 97-100 (1977) [15 ref. En] [Food Hygiene Lab., Cent. Public Health Lab., Colindale Avenue, London NW9 5HT, UK]

Characteristics of bacterial food poisoning in the UK are briefly discussed; 8000-12 000 cases of food poisoning are notified each yr. 70-80% are a result of Salmonella infections, especially S. typhimurium. Salmonella outbreaks are associated with meat, poultry and unpasteurized milk, all usually contaminated at source. Cross-contamination between raw and cooked food is seen as a major source of infection. The incubation period, duration and symptoms of infections, qualitative heat resistance and foods most frequently implicated are tabulated for Salmonella, Staphylococcus aureus, Clostridium welchii, C. botulinum, Vibrio parahaemolyticus, Bacillus cereus and Escherichia coli. [See FSTA (1978) **10** 4C105.] DIH

29

[Package for poultry.]
Sauterot Drac
French Patent Application 2 331 492 (1977) [Fr]

An improved package for a dressed fowl is shown as a cut-out blank which folds up into a trapezoidal shape with the two non-parallel sides equal in length. Flaps are provided at the ends, at one end to cover and protect the fowl's drumsticks, at the other end to provide a visible space for labelling. There is no cover but the whole is enveloped in a plastics bag when filled. W&Co

30

[Calculation of material consumption standards for the manufacture of ready-to-serve dishes of poultry meat for medicinal purposes.]
Bobis, L.; Dzurekova, E.
Hydinarsky Priemysel **19** (4) 158-168 (1977) [Sk]
[Vyskumny Ustav Hydinarskeho Priemyslu, Bratislava, Czechoslovakia]

The use of the analog computer CDC 3300 to calculate material consumption standards for the manufacture of ready-to-serve dishes is discussed. The method was found to be accurate enough even when a large number of problems were involved, and results were obtained in a very short time. The model can incorporate all data relevant, from the medical point of view, for a particular type of diet.
STI

31

Process for pasteurizing raw poultry.
Rogers, A. B. (Armour & Co.)
United States Patent 4 045 579 (1977) [En]

The bacteria of fresh or frozen poultry, e.g. chickens and turkeys, are killed by immersion in oil at 180-315° F for 10-60 s without greatly affecting the natural bloom of the poultry. IFT

32

Incidence of Salmonella in slaughtered poultry and its public health significance.
Pramanik, A. K.; Khanna, P. N.
Indian Journal of Animal Health **16** (1) 41-43 (1977) [13 ref. En] [IVRI Unit, All India Inst. of Hygiene & Public Health, Calcutta, West Bengal, India]

300 samples from 100 slaughtered birds collected from Calcutta market were examined for Salmonella contamination. The 9 strains detected belonged to the species S. typhimurium (3), S. anatum (3), S. pullorum (2) and S. newport (1).
CFTRI

33

[The dressing yield of ducklings slaughtered at the age of 5 to 8 weeks.]
Hudsky, Z.
Hydinarstvo No. 13, 129-134 (1973) [4 ref. Cs, en, ru] [Vyzkumny Ustav Zivocisne Vyroby,

Uhrineves, Czechoslovakia]

Crossbred ducklings of English drakes and Czech ducks had a higher growth rate than Czech breeds (from State Fishing Estates). The slaughter yield of the progeny of imported drakes was higher, and the proportion of bones to meat was lower than equivalent values for Czech breeds. STI

34

[Comparison of the results of liver production of four goose breeds. Test I.]

Stasko, J.

Hydinarstvo No. 13, 25-35 (1973) [10 ref. Sk, en, ru] [Vysoka Skola Pol'nohospodarska, Nitra, Czechoslovakia]

Force-feeding trials using a modified air pump were conducted to evaluate fat liver production in the Italian, Landes, Rheinland and Slovak breeds of geese, and 7 crosses between these breeds. The geese were force-fed with maize gruel 3-5 times daily for 34 days. The largest livers (332 g in males, 292 g in females) were produced by the Landes breed, followed by the Slovak breed. STI

35

Apparatus for cutting out the vent of a fowl.

Meyn, P.

British Patent 1 484 241 (1977) [En]

36

[New trends in the development of poultry meat products.]

Bobis, L.; Stefanik, I.; Domcek, I.

Hydinarsky Priemysel 19 (4) 135-146 (1977) [8 ref. Sk] [Vyskumny Ustav Hydinarskeho Priemyslu, Bratislava, Czechoslovakia]

The present mechanization level and production vol. were chosen as main criteria for further development in poultry meat production. It was established that the yearly output of poultry processing plants should be approx. 535-670 t live poultry in the yr 1980, under the assumption that the yearly consumption/head of population in Czechoslovakia would be 20-25 kg poultry meat, with a population of 17 million inhabitants. STI

37

[Hydrolytic and oxidation changes in poultry fat during high frequency heating.]

Khlebnikov, V.; Shumkov, E.; Vabishchevich, V.; Kovalenko, L.; Chomor, K.

Myasnaya Industriya SSSR No. 12, 29-32 (1976) [10 ref. Ru] [Vses. Nauchno-proizvodstvennoe Ob"edinenie Ptitsepererabatyvayushchei i Kleezhelatinovoi Promyshlennosti 'Kompleks', USSR]

The effect of high frequency (HF) heat treatment was studied using poultry fat. The fat was heated for 4 min to 75, 90, 105, 125 and 145°C using magnetrons with the frequency 2375 MHz, with a deviation of 0.72 to 1.95 MHz. Results show that ≤90°C no important hydrolytic changes occurred, while higher temp. caused important changes in the fat. The results show that HF heat treatment caused similar changes in fats to normal heating methods. It is recommended that temp. exceeding 145°C should not be used to heat fats and fat containing products. STI

38

Some factors affecting meat yield from young ducks.

Stadelman, W. J.; Meinert, C. F.

Poultry Science 56 (4) 1145-1147 (1977) [7 ref. En] [Dep. of Anim. Sci., Purdue Univ., W. Lafayette, Indiana 46542, USA]

10 White Pekin ducklings were processed and frozen at each of the following ages: 28, 35, 41, 46, 48, 50, 53, 55, 57, 63 and 68 days. Necks and giblets were discarded. The % dressed duck, without neck and giblets, in breast meat, leg meat, total wing, and skin and fat was determined on all ducks. The % of breast meat increased from 4.79% to 15.93% for ducks 28 and 63 days of age, resp.. Leg meat decreased from 17.97% to 12.28% for the same ages of ducks. The % of skin and fat reached a min. with 53 day old ducks. A second experiment was conducted with 6 age groups, six ducks each, from 28 to 51 days of age. % of breast meat were almost identical in the 2 studies. Studies were also conducted to determine the effect of injecting a tripolyphosphate solution as 3% of body wt. on yield of cooked duck meat. Injected birds yielded a higher % of meat and a lower % of skin. The skin of roasted injected birds was crisper than that of roasted controls. AS

39

[Water content of frozen poultry.] Wassergehalt von Gefriergeflügel.

European Economic Community, Council of the European Communities

Zeitschrift für Lebensmittel-Untersuchung und - Forschung 165 (3, Beilage) 44-48 (1977) [De]

Ordinance No. 2967 (23 Nov., 1976) of the Council of the European Communities is reproduced in the legislative supplement of the journal. The ordinance lays down common standards for the water content of frozen chicken, and recommends methods for the detn. of water content and water uptake of frozen poultry and permissible descriptions of frozen poultry which has been chilled without water uptake. DIH

40

[Limitations on storage time of frozen foods.]

Jacqmain, D.

Revue des Fermentations et des Industries Alimentaires 32 (2) 40-45 (1977) [Fr, nl] [Inst. des Ind. de Fermentation, Inst. Meurice Chimie, CERIA, B-1070 Brussels, Belgium]

A study is reported on the extent to which enzymes secreted by microorganisms before freezing can still remain active in frozen food

although the organism is dormant. One of the factors discussed is the effect of increased crystallization of water with increasing concn. of solutes in the non-crystallized water until eventually all remaining water is bound to the solute. As temp. falls water activity is reduced, which prevents microbial growth; enzyme activity is also reduced, but lipases can remain active down to 0.3 water activity. In contrast, oxidation increases at low temp. In meat, increased ionic concn. in muscle cells reduces water retention due to protein denaturation and gives juice loss on thawing. Frozen vegetables lose green colour due to substitution of Mg. Oxidation changes are of major importance and include: autoxidation of meat lipids catalysed by haemopigments; rapid fat oxidation in fish; and flavour and colour changes in frozen vegetables with loss of ascorbic acid. Deterioration change is delayed as temp. is reduced in a significant exponential relation; various regression equations are given. Numerical examples for each 10° C reduction of storage temp. are: storage life of frozen vegetables increased × 11; retention of colour and flavour of strawberries × 22 and ascorbic acid × 16; and storage life of cod fillets × 3.7, haddock × 2.8 and poultry × 3.5. However, cost increases as temp. is reduced. ELC

41

[Residues of organochlorine pesticides in poultry meat and eggs in the Netherlands during the period March 1975-March 1976.]
Kan, C. A.; Bouwstra, E.
Voedingsmiddelentechnologie 10 (2) 10-11 (1977) [4 ref. Nl] [Inst. voor Pluimveeonderzoek 'Het Spelderholt', Beekbergen, Netherlands]

A brief account is given of studies on the presence of residues of organochlorine pesticides in eggs and poultry in the period under investigation. All 220 egg samples studied were free from organochlorine pesticide residue concn. exceeding the Netherlands tolerance. In approx. 250 samples of poultry fat, Netherlands tolerances were exceeded only in 3 samples, DDT, aldrin and dieldrin concn. exceeding the tolerance levels in 1 sample each. Residue concn. in both eggs and poultry were, in general, far below the tolerance levels. AJDW

42

[Effect of the content of NaCl on the hygroscopicity and keeping quality of food concentrates. II. Effect of NaCl on the keeping quality of food concentrates.]
Piechanowski, J.; Tietz, B.
Prace Instytutow i Laboratoriow Badawczych Przemyslu Spozywczego 26 (4) 395-408 (1976) [6 ref. Pl, ru, en] [Cent. Lab. Przemyslu Koncentratow Spozywczych, Poland]

The concentrates studied were dried beef, beef tallow, poultry fat and hardened vegetable oil. Addition of kitchen salt to the food concentrates produced, in the majority of cases, spoilage and reduction of keeping quality. It was demonstrated that addition of salt produces increased proneness to oxidation and impairs keeping quality. Vapour-proof packages were definitely effective in improving the keeping quality of food concentrates. STI

43

[Use of meat in prepared dishes.]
Prud'homme, J.
Industries Alimentaires et Agricoles 94 (9/10) 1009-1016 (1977) [Fr, de, en]

Technical and legal problems attending the use of meat from marine animals, poultry and mammals and of reconstituted meat for manufacturing prepared deep-frozen or sterilized meals are reviewed. RM

44

[Presence of residual amounts of chlortetracycline in the organs and tissues of poultry.]
Sheveleva, S. A.; Bogoroditskaya, V. P.
Voprosy Pitaniya No. 6, 64-67 (1977) [17 ref. Ru, en] [Inst. Pitaniya AMN SSSR, Moscow, USSR]

Poultry products (meat, liver, kidneys of hens and chickens) were found to be contaminated with chlortetracycline used as a growth stimulant. From among 603 samples examined, 91 (15.1%) were found to contain residual amounts of the antibiotic comprising from 0.01 to 1.0 μg/g tissue. Most often the antibiotic was determined in the tissues of the kidneys (24.7%), and liver (19.5%) and more seldom in that of the muscles (2.4%). Regular control is needed for the presence of antibiotics in the products of the poultry industry. AS

45

Preparation of duck for the table - the right way.
Muraleedharan Nair, C. P.
Poultry Guide 14 (11) 39-41 (1977) [En] [Farm Information Bureau, Gov. of Kerala, Trivandrum 695 010, Kerala, India]

Recommendations are given for slaughter of ducks, with reference to: slaughter by dislocation of the neck, or by sticking; feather removal; evisceration; and utilization of the feathers. CFTRI

46

[Cleaning and disinfection in poultry slaughterhouses. Possibilities and limits.]
Reinigung und Desinfektion in Geflügelschlachtereien. Möglichkeiten und Grenzen.
Wettke, K.
Tierärztliche Umschau 32 (12) 670-672, 675 (1977) [11 ref. De] [Veterinärswesen, Regierungspräsidium, 7400 Tübingen, Federal Republic of Germany]

Problems of cleaning and disinfection in poultry slaughtering plants are discussed. Swab samples

from 27 small plants operating mostly without disinfection produced only 1 salmonella-positive sample (S. indiana) from the scalding installation, but produced appreciable counts of colony-formers with replicate plate samples from work tables and containers. The risk of salmonella contamination is much greater in large plants, where the chance of cross contamination rises with the number of salmonella-infected animals. Reduction of the infection rate in the supply of birds may be the most effective method of prevention. A cleaning and disinfection programme in accordance with German regulations is proposed. RM

47

[Equipment for meat preparation.] Maschinen für die Fleischvorbereitung.
Bakker, A. F.
Fleischerei 28 (9) 43-44, VI (1977) [De, en, fr]

Meat preparation equipment described includes: the Whizard rotary knife for removal of residual meat from bones; the Palmia Model 400 large-scale mincing machine for comminution of frozen blocks of meat; the Skinner 500 for derinding or skinning of meat, fish or poultry products; and the Skinner Model 12 device for defatting of hams. AJDW

48

Poultry meat hygiene: implementation of the regulations in Great Britain.
Goalen, H. M.
Veterinary Record 101 (25) 495-497 (1977) [En] [Min. of Agric., Fisheries & Food, 13th Floor, Tolworth Tower, Surbiton, Surrey, UK]

Implications of the UK Poultry Meat (Hygiene) Regulations, which are necessary for implementation of the EEC poultry meat and hygiene directive are discussed. Aspects considered include: responsibilities for implementation of the directive; the scope of the regulations; exemption of 'farm gate' sales and dry-plucked non-eviscerated poultry; designation and training of veterinary personnel; licensing of premises; phasing-in of supervision and meat inspection; and the role of the official veterinary surgeon. AJDW

49

Meat tray.
Florian, J. (Mobil Oil Corp.)
United States Patent 4 057 651 (1977) [En]

A tray package for meat or poultry and chicken parts has a construction to provide a fluted corner terminating at a shoulder when the package is overwrapped with transparent film. IFT

50

Feed apparatus for poultry gizzard processing machine.
Hill, C. J.
United States Patent 4 057 875 (1977) [En]

Apparatus for processing poultry gizzards includes a pair of rotating gears with associated knife means, defining a nip to separate the gut and gullet from the gizzard. IFT

51

Poultry trussing retainer.
Cloyd, J. K. (Volk & Son Manufacturing Co. Inc.)
United States Patent 4 056 865 (1977) [En]

A dressed poultry trussing retainer includes a pair of arms, joined at one end by an interconnecting flap, each arm having at its other end an outwardly-extending finger for grasping the bone structure of the poultry carcass. IFT

52

Effect of exposure of meat and poultry to chlorinated water on the retention of chlorinated compounds and water.
Cunningham, H. M.; Lawrence, G. A.
Journal of Food Science 42 (6) 1504-1505, 1509 (1977) [9 ref. En] [Health Protection Branch, Health & Welfare Canada, Tunney's Pasture, Ottawa, Ontario K1A OL2, Canada]

Pieces of beef, pork and poultry were immersed for 2, 6 and 24 h in 100 times their wt. of water containing 200 p.p.m. chlorine labelled with ^{36}Cl. Within 2 h > 50% of the chlorine had reacted with the meat. Most of the products of chlorination were water-soluble and had leached into the water, but small amounts of chlorinated lipids and water-soluble chlorinated compounds were found in the meat. These ranged from 2-3% of the total ^{36}Cl present at 2 h to 6-8% at 24 h. Meat treated with chlorinated water was found to increase much more in wt. than meat treated with unchlorinated water. Chicken skin was found to absorb more water than lean or fat, and increased in wt. by 130% after 2 h in chlorinated water. IFT

53

A comparative study of the changes in hen pectoral muscle during storage at 4° C and -20° C.
Yamamoto, K.; Samejima, K.; Yasui, T.
Journal of Food Science 42 (6) 1642-1645 (1977) [24 ref. En] [Dep. of Dairy Sci., Coll. of Dairying, Ebetsu, 069-01, Japan]

Evidence has been presented to show that myofibrillar fragmentation is the principal cause of the tenderness of poultry meat. Changes in actin-myosin interaction seem to play some role during frozen storage at -20° C. The changes in shear force and myofibrillar fragmentation of hen pectoral muscle during storage at 4° C and -20° C were studied, comparatively. The shear force values of postrigor muscle stored at 4° C and those of the frozen muscle were about half of the fresh muscle values. Myofibrillar fragmentation in samples stored at 4° C was complete on 3rd day postmortem; whereas it proceeded gradually during storage at -20° C. Myosin heavy chain was degraded in frozen muscle samples, which in turn affected myofibrillar ATPase activity. 27 000 and 30 000 dalton proteins, possibly the degradation products of troponin, appeared in muscle samples stored both at 4° C and -20° C. IFT

54

[Method and apparatus for removing the gizzard and crop from slaughtered poultry.]
Andersen, B. C. (Forsogs Fjerkrae Slagteriet)
Danish Patent Application 136 574 (1977) [Da]

A labour-saving method for removing the gizzard and crop from poultry, after other giblets and the intestines have been removed through an opening in the abdomen, involves introducing into the abdominal cavity a mechanical device which grips the oesophagus between the stomach and crop; smoothly and evenly withdraws it together with the crop, while at least partly detaching the oesophagus from the neck; and finally tears the part of the oesophagus positioned between the crop and the head while preventing the poultry body from moving during pulling. W&Co

55

Biochemical characteristics and enterotoxigenicity of Staphylococcus aureus strains isolated from poultry.
Gibbs, P. A.; Patterson, J. T.; Harvey, J.
Journal of Applied Bacteriology 44 (1) 57-74 (1978) [44 ref. En] [Dep. of Agric. for N. Ireland, Queen's Univ. of Belfast, Belfast, UK]

The incidence of Staphylococcus aureus on poultry carcasses in 6 different poultry processing plants over a period of 3 yr was studied. Sources of strains and phage typing were established by biochemical tests (coagulase test, haemolysin production etc.). Results showed end-of-lay hen carcasses generally carried larger numbers of Staph. aureus than broiler carcasses. About half (49%) of the strains of Staph. aureus isolated from poultry were non-typable with the international human set of phages; 55% were biotype B, according to the biochemical identification scheme of Hajek and Marsalek [Zentralblatt für Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene 1 Abteilung Originale Reihe (1973) A223, 176-182]. A furthest neighbour clustering strategy and principal coordinate analysis based on 17 biochemical tests made clear distinctions between biotype B strains and a group of biotype A and intermediate strains. Overall, 62% of strains were enterotoxigenic, the majority producing enterotoxin A. Starch gel zymograms of intracellular esterases showed a general correlation with the biotyping and phage typing results. It was suggested that live birds were probably the major source of non-typable strains within the plant and on the carcasses, although some human types were contributed during processing from slaughtermen (hands and knives), scald water, post plucking inspectors' hands, and before evisceration, flail washer and inspection. SP

56

Improvements relating to conveyors incorporating weight sensing devices.
Auto Systems Ltd.
British Patent 1 488 345 (1977) [En]

Poultry conveying apparatus adapted to sort carcasses according to wt. uses an electronic transducer which is repeatedly recalibrated by a reference wt. IFT

57

Conveyors incorporating weight sensing devices.
Auto Systems Ltd.
British Patent 1 488 346 (1977) [En]

58

Apparatus for cutting open a fowl.
Meyn, P.
United States Patent 4 059 868 (1977) [En]

An apparatus is described for cutting open the body cavity of a fowl hanging by the ankle joints from a hook of an overhead conveyor. IFT

59

Council Directive of 13 December 1977.
European Economic Community, Council of Ministers
Official Journal of the European Communities 21 (L15) 28-31 (1978) [4 ref. En]

Council Directive No. 78/50/EEC of 13 Dec., 1977, supplements, as regards the chilling process, Directive 71/188/EEC on health problems affecting trade in fresh poultry meat. This Directive replaces Article 14 of Directive 71/118/EEC which relates to the chilling of fresh poultry meat by means of immersion in water. A new Article, 14a, which deals with chilling processes for carcasses, microbiological checks, and water uptake, shall be incorporated. The following points must be added to Chapter V of Annex I 'Carcasses to be subjected to an immersion chilling process must immediately after evisceration be thoroughly washed by spraying (internal and external surfaces) and immersed without delay. Carcasses weighing < 2.5 kg must have ≥ 1.5 l. of water/carcase, 2.5-5 kg must have ≥ 2.5 l./carcase and > 5 kg must have ≥ 3.5 l./carcase.' Requirements which must be met by the immersion chilling process are listed. Member States shall bring into force the laws, regulations and administrative provisions required in order to comply with this Directive by 1 Jan, 1978. VJG

60

Code of hygienic conditions for processed meat products.
India, Indian Standards Institution
Indian Standard IS 8182-1976, 19pp. (1976) [En]
Price Rs8.50 [Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002, India]

Hygienic requirements are prescribed for the production, handling, packaging, storing and transport of processed meat products (including poultry meat). AL

61

Symposium on current studies on the chemistry of food irradiation. [Conference proceedings]
Merritt, C., Jr. (United States of America, American Chemical Society; Chemical Institute of Canada; Mexican Chemical Society) (Chairman)
Journal of Agricultural and Food Chemistry 26 (1) 1-35 (1978) [many ref. En]

6 papers are published, which were presented at a symposium held at the 1st Chemical Congress of the North American Continent in Mexico City in Dec. 1975. The papers are abstracted separately and are in the FSTA author index under **United States of America**, American Chemical Society [Food Irradiation Symposium]. Papers also presented at the symposium but not published are: Chemical aspects of irradiating frozen aqueous systems, by I. A. Taub; The influence of γ-radiation on catheptic activity and on ultrastructure of lysosomes and postmortem skeletal muscle of poultry (Gallus domesticus), by J. F. Richards; and Chemical consequences of irradiating nucleic acids, by L. S. Myers, Jr. DIH

62

Nondestructive quality evaluation of agricultural products - industrial application. [Lecture]
Marion, J. E.; Ayres, J. L.; Steele, B.
Journal of Food Protection 41 (1) 54-56 (1978) [15 ref. En] [Gold Kist Res. Cent., Lithonia, Georgia 30058, USA]

Use of nondestructive quality evaluation techniques for agricultural products is steadily increasing. Reasons for increased application and refinements of techniques in processing of agricultural products are discussed, especially with regard to more automation and less labour in processing, increased processing rates, and demand for higher quality and more uniformity of product. Information is presented on a number of nondestructive techniques presently being used, and the need for additional development is covered. Special emphasis is given to the efficiency, practicality, and economic feasibility of various techniques. Agricultural products covered include peanuts, pecans, poultry, eggs, pork and seeds. Nondestructive techniques discussed that are used for processing these commodities into uniform, high-quality products include visual examination, weighing, screening, gravity sorting, air classification, electronic sorting and estimation of chemical composition. A more detailed discussion of electronic colour sorting of peanuts, pecans and almonds is presented, particularly in relation to aflatoxin sampling and reduction, preparing for further processing, and evaluating commercial sorters for speed and accuracy. [See FSTA (1978) 10 7A393.] AS

63

[Results of 10 years experience of CNEN in the field of food irradiation. Considerations on technological, economic and legal aspects.]
Baraldi, D.; Cervigni, T.
Rivista della Societa Italiana di Scienza dell'Alimentazione 7 (1) 53-64 (1978) [36 ref. It] [Div. Applicazioni delle Radiazioni, CNEN, CSN Casaccia, S. Maria de Galeria, Rome, Italy]

A review is given of studies on γ-irradiation of foods, especially sterilization of fruit, vegetables, egg products, poultry etc., and inhibition of sprouting of potatoes. Effects of irradiation on the composition and quality of foods are discussed. Practical aspects of food irradiation are discussed, and costs are considered with special reference to equipment for irradiation of vegetables. Studies on marketing of irradiated potatoes in Italy are discussed, and legal aspects of food irradiation are considered. AJDW

64

Apparatus for processing poultry.
Crane, E. J. (Barker International Inc.)
United States Patent 4 064 596 (1977) [En]

A poultry processing apparatus includes elongated, flexible, resilient picking fingers which contact and remove feathers during movement through an enclosure on a continuously moving conveyor. GL

65

Radiation inactivation of Salmonella panama and Escherichia coli K12 present on deep-frozen broiler carcasses.
Mulder, R. W. A. W.
European Journal of Applied Microbiology 3 (1) 63-69 (1976) [15 ref. En] [Processing Dep., Spelderholt Inst. for Poultry Res., Beekbergen, Netherlands]

Low doses of ionizing radiation have been used to extend the shelf life of refrigerated poultry carcasses and to reduce the numbers of salmonellae present. This report gives results of experiments on irradiation of deep-frozen poultry carcasses which were, before freezing, artificially contaminated with Salmonella panama and with a nalidixic acid-resistant Escherichia coli K 12. The D-values obtained with the inoculated carcasses were compared with D-values obtained with carcasses which were slaughtered in the normal way. The D-values for S. panama and for E. coli K 12 were 64.9 krad and 55.9 krad in the dripwater. Under commercial conditions approx. 100 krad were required for one decimal reduction of the Enterobacteriaceae present. The D-values estimated on the skin were higher for S. panama than for E. coli K 12 (128.6 krad vs. 57.6 krad). If it is assumed that 1 positive carcass in 10 000 is allowed, the deep-frozen carcasses should be irradiated with doses of at least 700 krad to be sure of the absence of the tested S. panama strain. AS

66

The C & D Duck story.
Anon.
Quick Frozen Foods 38 (12) 38-43 (1976) [En]

Production and processing of ducklings by C & D is described. The 7 wk old ducklings arrive at the 30 000 ft^2 processing plant, are shackled, stunned before being bled, pass through several scalders and then through a mechanical picker, a water bath, a wax tank, and into cold water, to a mechanical wax stripper which removes the wax and with it the remaining feathers, and then through the eviscerating line. The ducks are then automatically washed and dropped into a pre-chiller bath held at 33° F and then into a giant 60-ft Mueller ammonia jacketed chiller for final chilling. At the end the carcass temp. is 40° F. The packaged duckling is frozen, finally emerging at a temp. of 10° F. Ducklings move along through the processing plant at the rate of about 50/min. VJG

67

Health laws and regulations - France.
World Health Organization
International Digest of Health Legislation 28 (2) 255-278 (1977) [En]

A selection of French health laws and regulations is presented including the following which relate to food hygiene: Order of 12 Oct., 1976, prescribing standards of wholesomeness for shellfish breeding areas. It concerns the wholesomeness of oysters, mussels and other shellfish as last amended by Decree No. 69-578 of 12 June 1969. Areas in which the MPN (of faecal coliforms found in 100 ml of shellfish flesh crushed and diluted) is < 300 may be classified as wholesome. Areas that fail to meet this requirement are classified as unwholesome and shellfish may not be caught in such areas, unless it is intended that they undergo subsequent treatment; Order of 3 Feb., 1977, prescribing the health standards to be met by slaughterhouses approved for the export of poultry meat and laying down conditions for the health inspection of such establishments; and Order of 4 Feb., 1977, on the entry into France of fresh poultry meat originating in the Member States of the European Economic Community. VJG

68

Health laws and regulations - Federal Republic of Germany.
World Health Organization
International Digest of Health Legislation 28 (3) 542-597 (1977) [En]

A selection of health laws and regulations is presented including the following which relate to food hygiene: Ordinance of 2 Jan., 1975, on exemptions from the withdrawal period required under the second sentence of sub-section 2 of section 15 of the Foodstuffs and Consumer Goods Law (details are given of conditions under which foodstuffs may be derived from animals to which substances with pharmacological activity have been administered); (Provisions of the First Ordinance of 15 May 1931 implementing the Milk Law, which prohibit the extraction and marketing of milk from cows treated in the previous 5 days with medicaments eliminated with the milk, are repealed); Ordinance of 16 May, 1975, adapting Ordinances in the field of foodstuffs law to take account of the penal provisions of the Law for the overall reform of foodstuffs law; Ordinance of 21 July 1975 on min. health requirements for special slaughterhouses and special premises within slaughterhouses lays down min. sanitary standards in which animals affected by zoonoses or that are carriers of pathogenic microorganisms are to be slaughtered; and The Minimal Requirements for Poultry Meat Ordinance of 24 July 1973, as amended and the Poultry Meat Inspection Ordinance of the same date, as amended, are further amended principally by the extension of their provisions to cover meat-cutting establishments. VJG

69

A product management approach to controlling quality of refrigerated foods.
McCormick, R. D.
Food Product Development 11 (8) 14, 16-17 (1977) [En]

The quality control programme introduced at Reser's Fine Foods, Beaverton, Oregon, is described, with particular reference to refrigerated foods commonly identified as deli salads and sold through retail outlets as "fresh". Products prepared by Reser's Fine Foods include gelatin items, poultry and meat specialities, cheeses, salad dressings, and fresh and cooked sausage products. The control procedure is based on analysis of the variables in manufacturing in terms of those critical to end product quality and the detn. of effective limits for these critical points to achieve product uniformity. VJG

70

Comparison of two minikits (API and R-B) for identification of Enterobacteriaceae isolated from poultry and meat products.
Cox, N. A.; Mercuri, A. J.
Journal of Food Protection 41 (2) 107-110 (1978) [19 ref. En] [Anim. Products Lab., Russell Res. Cent., USDA, Athens, Georgia 30604, USA]

2 miniaturized commercial kits (API and R-B) were evaluated for identification of 373 strains of Enterobacteriaceae isolated from selected poultry and meat and meat products, such as frozen chicken pot pie, frozen comminuted chicken, processed chicken, ground beef, and pork sausage. The taxonomic classification by these 2 systems was identical for 59% (221/373) of the isolates. Whenever the 2 systems disagreed, cultures were identified by conventional methods. The API correctly classified 82% (306/373) of the isolates, while R-B correctly classified 72% (267/373). Most of the disagreements involved organisms of the Klebsiella-Enterobacter-Serratia group of the Enterobacteriaceae family. AS

71

Poultry meat preservation.
Appa Rao, V.
Poultry Guide 15 (1) 53-58 (1977) [En] [Cent. Training Inst. for Poultry Production & Management, Hesaraghatta-562 113, Karnataka, India]

Various methods for preserving meat, including chilling, freezing, dehydration, packaging, curing, smoking, irradiation, storage under CO_2 and the use of chemical preservatives, are described. CFTRI

72

[Detection of erythromycin residues in poultry meat.]
Rutczynska-Skonieczna, E. M.
Roczniki Panstwowego Zakladu Higieny 28 (6) 571-576 (1977) [7 ref. Pl, ru, en] [Zaklad Badania Zywnosci i Przedmiotow Uzytku Panstwowego Zaklad Higieny, Warsaw, Poland]

A method was developed for detection of erythromycin in poultry meat, involving identification of the drug by 2-dimensional chromatography. The antibiotic was extracted from meat with ethyl acetate in alkaline medium. For defatting the extract the acetate was vapourized, and the remaining extract, dissolved in a water-acetonitrile mixture (1:6), was agitated with petroleum ether. The water-acetonitrile extract was purified with a 10% solution of sodium carbonate after previous addition of benzene. The benzene-acetonitrile layer was dried with anhydrous Na_2SO_4 and evaporated to dryness in an N_2 stream. The dry residue was dissolved in methanol and spread on a plate covered with a suspension of silica gel G (Merck), according to Stahl, in phosphate buffer at pH 8. The chromatogram was developed in 2 dimensions in the system: neutralized methylene chloride/benzene/methanol/formalin in an 80:20:20:4 ratio. Spots of antibiotic were produced by spraying the plate with 15% solution of o-phosphoric acid in ethanol and heating it for 5 min at 100-105° C and then with a stream of warm air. In the presence of erythromycin yellow-orange spots appeared. The sensitivity of the method is 0.25 mg/kg poultry meat. AS

73

[Problems with determination of bone in meat deboned by means of a mechanical separator.]
Bolder, N. M.; Hospers, H.
Voedingsmiddelentechnologie 10 (19) 11-15 (1977) [37 ref. Nl] [Inst. voor Pluimvee-onderzoek 'Het Spelderholt', Beekbergen, Netherlands]

Methods for detn. of the concn. of comminuted bone in mechanically-deboned meat are discussed; it is concluded that biochemical, X-ray, flotation and histological methods are of insufficient accuracy and/or specificity for routine detn. of bone in mechanically-separated meat. Studies were conducted on a chemical method based on digestion of the sample with alcoholic KOH, and subsequent separation of bone particles by filtration; experiments were conducted with 7 types of poultry bone. Tables of results are given for particle size distribution, % recovery, etc. Sources of inaccuracy include loss of organic matter during the digestion process, loss of fine particles during the filtration process, and possible retention of starch particles on the filter (if a starch-containing product is under test) with consequent overestimation of the bone content. Problems may also occur with the variable cartilage content of poultry meat. It is suggested that bone content should be evaluated on the basis of both the KOH digestion method and detn. of the Ca content in the sample. AJDW

74

Stress and meat quality. [Lecture]
Bulgakova, L. V.; Gorbataya, N. P.; Ivanova, T. V.; Solov'ev, V. G.; Shumkov, E. G.
Proceedings of the European Meeting of Meat Research Workers No. 23, B7:1-B7:19 (1977) [9 ref. En, Ru] [Nauchno-proizvodstvennoe Ob"edinenie Ptitsepererabatyvaiyushchchei i Kliecthelatinovoi Promyshlennosti "Kompleks", Moscow, USSR]

The effect of electrical stunning and killing on the physiological condition of poultry and the quality of the meat was studied. Electrical stunning produced a stress reaction accompanied by marked changes in blood coagulation. The bleeding process was impaired, and the action of trypsin on the warm meat proteins was reduced. No such changes occurred in beheaded poultry. Biochemically and from the viewpoint of tenderness, the quality of meat from electrically stunned birds was below that of beheaded birds. Other techniques of stunning the animals, in particular anaesthetic methods, should be sought. [See FSTA (1978) 10 8S1048.] STI

75

[Chilling and freezing of poultry using the immersion method.] [Lecture]
Bol'shakov, A. S.; Venger, K. P.; Shakhov, V. V.
Proceedings of the European Meeting of Meat Research Workers No. 23, D18:1-D18:16 (1977) [3 ref. Ru, De] [Moskovskii Tekh. Inst. Myasnoi i Molochnoi Promyshlennosti, Moscow, USSR]

Immersion freezing of packaged poultry was investigated, with the aim of obtaining products of high quality. Equipment was developed which may be used for freezing and chilling of all kinds of poultry, as well as other food products wrapped in plastics films. The immersion method and equipment recommended proved to be of great value for cold processing of poultry. [See FSTA (1978) 10 8S1048.] STI

76

[Changes in the intramuscular binding tissue of poultry during cold storage.] [Lecture]
Bulgakova, L. V.; Golovkin, N. A.; Savran, E. G.

Proceedings of the European Meeting of Meat Research Workers No. 23, D20:1-D20:20 (1977) [7 ref. Ru, De] [Nauchno-proizvodstvennoe Ob"edinenie Ptitsepererabatyvayushchei i Kleezhelatinovoi Promyshlennosti 'Kompleks', Moscow, USSR]

The effects of cold processing methods and storage on the properties of the intramuscular binding tissue and muscle proteins and on the technological properties of meat were investigated. Correlations between extractable mucopolysaccharide content, protein digestibility by gastrointestinal enzymes, water binding capacity and tenderness of meat were established. [See FSTA (1978) 10 8S1048.] STI

77

Interrelation of physicochemical changes and nutritional value of poultry meat. [Lecture]
Lubyanetskii, S. A.; Novikova, M. I.; Rassadkina, E. A.; Shvyreva, R. A.
Proceedings of the European Meeting of Meat Research Workers No. 23, E10:1-E10:20 (1977) [10 ref. En, Ru] [Voronezhskii Tekh. Inst. Pishchevoi Promyshlennosti, Voronezh, USSR]

It was established that poultry processing using the normal processing line (heating, machine plucking) accelerated rigor mortis. It is therefore necessary to improve the cooling process. The production and storage of poultry frozen at low temp. are discussed; it was established that autolytical changes occurring at 0° C were identical to those occurring at -2° C. At lower temp., the muscle tissue does not contract and the storage life may be prolonged up to 3 wk without any deterioration of meat quality. It was established that the nutritive value of poultry meat depended on the extent of autolytic changes and on the processing technology, cooling, and the cold storage period. [See FSTA (1978) 10 8S1048.] STI

78

The nutritional and biological value of foods containing meat products processed using electrophysical methods. [Lecture]
Kraiko, E. A.; Kulakova, S. N.; Laktaeva, T. V.; Nemenova, Yu. M.; Popova, A. V.; Yasyreva, V. A.
Proceedings of the European Meeting of Meat Research Workers No. 23, E12:1-E12:14 (1977) [En Ru] [Inst. Pitaniya AMN SSSR, Moscow, USSR]

The nutritive value of meat products, comminuted meat products and poultry meat products manufactured using the common methods (cooking in water, frying) and electrophysical methods (microwave or IR heating) was judged on the basis of sensory, microbiological and physiological characteristics. No substantial effects of the electrophysical methods on chemical composition were found. The effect of microwave heating on saprophytes was equal to the effect of common heating methods; spore-forming microorganisms required more intensive heating methods. Tests using isolated dog stomachs showed that feeding microwave-heated meat resulted in a more pronounced reaction of stomach in comparison with commonly cooked meat. The stomach exhibited, particularly in the initial stage, a more intense secretion. A similar effect was observed when meat processed by intense IR radiation was fed. Meat processed using the combination of microwave and IR heating caused similarly increased secretion. [See FSTA (1978) 10 8S1048.] STI

79

The effect of thermal processing on the indices of poultry meat quality. [Lecture]
Gonotskii, V. A.; Miloserdova, V. A.
Proceedings of the European Meeting of Meat Research Workers No. 23, H4:1-H4:16 (1977) [6 ref. En, Ru] [Nauchno-proizvodstvennoe Ob"edinenie Ptitsepererabatyvayushchei i Kleezhelatinovoi Promyshlennosti 'Kompleks', Moscow, USSR]

The temp. needed for effective boiling of skin collagen from some types of poultry was determined, together with changes in the effect of trypsin on the skin's protein in relation to the temp. and duration of heating, and the resultant effects on the hydrothermal resistance of the collagen and on the cutting resistance of the meat. The data obtained were used to calculate the optimal thermal conditions for processing poultry meat in No. 3 (250 g) cans. [See FSTA (1978) 10 8S1048.] STI

80

Inhibition of bacterial growth with aqueous chlorine. [Lecture]
Kotula, A. W.; Emswiller, B. S.; Pierson, C. J.
Proceedings of the European Meeting of Meat Research Workers No. 23, L2.1-L2:15 (1977) [10 ref. En, Ru] [Meat Sci. Res. Lab., Beltsville, Maryland 20705, USA]

The inhibitory effect of aqueous Cl_2 on the growth of 14 pure and 2 mixed cultures of bacteria was studied. Aqueous solutions of electrolytically-generated Cl_2, $Ca(OCl)_2$ and ClO_2 were used in concn. of 50, 100, 200, 400, 800, 1600 and 3200 p.p.m. All solutions were adjusted to pH 6.5. Zones of inhibition were measured after 18 h of incubation at 30° C. Larger inhibition zones were observed when electrolytically-generated Cl was used or $Ca(OCl)_2$ than when ClO_2 was used. The difference was particularly significant in the cases of Achromobacter pestifer, Bacillus cereus, Proteus vulgaris, Pseudomonas fluorescens, Ps. fragi, Salmonella typhimurium, Salm. newport, Salm. saint-paul, Salm. enteritidis and a mixed culture from poultry skin. No significant differences were observed in the case of Clostridium perfringens HT-2, Micrococcus varians, Staphylococcus aureus, Streptococcus faecalis and mixed cultures isolated from minced meat. Only B. cereus, Clostridium

perfringens, Ps. fluorescens and Ps. fragi exhibited zones of inhibition at Cl concn. of ≤200 p.p.m. [See FSTA (1978) 10 8S1048.] STI

81

[Study into the possibilities of edible broth production from the meat and bone residue from mechanical deboning of poultry.] [Lecture]
Beev, K.; Bakalivanov, S.; Mitkov, S.; Nikolova, R.
Proceedings of the European Meeting of Meat Research Workers No. 23, N14:1-N14:7 (1977) [4 ref. Ru] [Meat Tech. Res. Inst., Sofia, Bulgaria]

The second and third fractions of bone mass from mechanical deboning of poultry have a relatively high protein content, rendering them suitable for use in broth manufacture. Good results were achieved by cooking 1 part bone mass with 4 parts water for 4 h at 91-94°C. Chemical and electrophoretic analysis showed that, in spite of differences in composition and consistency, broths prepared from the 2 fractions were of similar quality. Digestibility of the proteins in the broth was high (>98%). [See FSTA (1978) 10 8S1048.] STI

82

[Determination of alkyl mercury in poultry meat.] [Lecture]
Karnaukhov, V. V.; Kovalenko, L. A.
Proceedings of the European Meeting of Meat Research Workers No. 23, P3:1-P3:16 (1977) [2 ref. Ru, Fr] [Nauchno-Proizvedstvennoe Ob"edinenie Ptitsepererabatyvayushchei i Kleezhelatinovoi Promyshlennosti "Kompleks", Moscow, USSR]

A fast, simple and reliable method was developed for ethyl- and methyl-mercury detn. in poultry meat. The method is based on alkyl-mercury extraction from the acidified homogenate into benzene, followed by purification of the extract in sodium thiosulphate solution. TLC on aluminium oxide or GLC using an electron capture detector are used for quantitative detn. The sensitivity of the method is 0.02 mg/kg with TLC, and 0.01 mg/kg with GLC. Recovery of ethyl- and methyl-mercury is approx. 90%. [See FSTA (1978) 10 8S1048.] STI

83

Production and retention of methanethiol in poultry muscle tissue.
Farbood, M. I.
Dissertation Abstracts International, B 38 (5) 2107: Order No. 77-23230, 83pp. (1977) [En] [Pennsylvania State Univ., University Park, Pennsylvania 16802, USA]

Previous studies indicated that free methionine is a precursor of methanethiol. Experiments involving incorporation of radioactive bound and free methionine into chicken meat indicated that bound methionine and a labile compound, S-adenosyl-methionine, which originates from it could also be precursors. When radioactive volatile S compounds, including methanethiol, were passed through a cold chicken meat slurry some of the compounds lost their volatility and were retained in the slurry. The retained S compounds were associated mainly with the protein fraction. It is suggested that these compounds could form a reservoir of precursors of S flavour compounds. Storage of chicken meat for 17 days at 4° and -17°C had a slight effect on the methanethiol production rate. Another study indicated that H_2S may be formed by the decomposition of volatile S compounds originating from methionine breakdown. JA

84

Combination treatment of gamma radiation and paraben in controlling spoilage of poultry meat.
Shiralkar, N. D.; Rege, D. V.; Manjrekar, S. P.
Indian Food Packer 31 (4) 18-21 (1977) [10 ref. En] [Univ. Dep. of Chem. Tech., Univ. of Bombay, Matunga, Bombay-400 079, Maharashtra, India]

The possibility of extending the shelf-life of poultry meat by (i) treatment with 0.1% propyl p-benzoate for 2 h; (ii) γ-irradiation with 0.1 Mrad; or (iii) a combination of (i) and (ii) was investigated. Flavour evaluation indicated that (iii) increased the shelf-life by 2-3 days more than (i) and (ii) for poultry meat stored at 6±2°C. CFTRI

85

Observations of the relationship between the surface area and weight of eviscerated carcasses of chickens, ducks and turkeys.
Thomas, N. L.
Journal of Food Technology 13 (2) 81-86 (1978) [1 ref. En] [Buxted Poultry Lab., Ross Poultry Ltd., Worstead, N. Walsham, Norfolk NR28 9SA, UK]

A method of measuring the approx. internal, external and total surface area of eviscerated poultry carcasses is described. The results of a series of measurements derived from commercially produced carcasses are expressed as linear equations from which the approx. external and total surface area of eviscerated carcasses can be calculated. The surface area of the body cavities can be determined by difference. The need to supply separate equations for calculation of the surface areas of turkeys above and below 7 kg is discussed. AS

86

Individual lipids and proximate analysis of various foods. II. Frankfurters and other meat and poultry products.
Newkirk, D. R.; Sheppard, A. J.; Hubbard, W. D.; Osgood, T.
Journal of Agricultural and Food Chemistry 26 (2) 348-350 (1978) [5 ref. En] [Div. of Nutr., FDA, Washington DC 20204, USA]

Samples of all-beef, beef-pork, and chicken frankfurters as well as various other meat and poultry products were purchased from several area supermarkets. The samples were analysed for water, total fat, fatty acids, protein, ash, and sterols. Cholesterol values ranged from 7 to 100 mg/100 g product. The fat content of the products varied from 2 to 30 g/100 g product. All of the products were compared with respect to proximate analysis and sterol and fatty acid content. [See FSTA (1978) 10 5J615 for part I and 10 9A547 for part III.] AS

87

[Effect of storage time and temperature on the quality of poultry meat.] Einfluss von Lagerdauer und -temperatur auf die Fleischqualität bei Geflügel.
Ristic, -.
Kälte 30 (11) 464, 469-472, 474 (1977) [11 ref. De] [Bundesanstalt für Fleischforschung, 8650 Kulmbach, Federal Republic of Germany]

The effects of long-term frozen storage on poultry meat quality were investigated. Extensive examination of physical and sensory properties and of fat characteristics were done on large numbers of frozen broilers, 170 turkeys and 160 geese stored at -10° to -30° C for ≤ 2yr; results are tabulated. Results are used to relate storage time and temp. to product quality, e.g. for broilers at -20° C, 12 months = short storage at excellent quality, 15 months = medium storage at good quality and 18 months = long storage at satisfactory quality. Comparable time limits are given for -10°, -15° and -30° C (i.e. 4, 5 and 6; 7, 11 and 13; and 15, 17 and 19 months, resp.). In turkeys the % drip loss did not change during 21 months' storage, freezer burn was not observed ≤ 12 months at -30° C or 18 months at -20° C, and the tenderness of the meat was not affected during 24 months at -20° C or 21 months at -30° C. Geese could be stored without loss of quality for ≤ 8 months at -15° C, ≤ 16 months at -30° C. RM

88

Effects of levels of fat and protein on the stability and viscosity of emulsions prepared from mechanically deboned poultry meat.
Mayfield, T. L.; Hale, K. K., Jr.; Rao, V. N. M.; Angulo-Chacon, I. A.
Journal of Food Science 43 (1) 197-201 (1978) [17 ref. En] [Dep. of Poultry Sci., Univ. of Georgia, Athens, Georgia 30602, USA]

A temp. controlled, capillary extrusion viscometer was used to compare meat batters prepared from mechanically deboned poultry meat (MDPM). Protein levels of 12% produced more viscous batters and less release of gel water and fat during emulsion stability tests than 11% protein. Product formulated with 21% fat gave less stable batters than that with 16% fat; however, the viscosity of the meat batter increased with increased level of fat. Although meat batters prepared from 2 different sources of MDPM exhibited similar emulsion stability and extrusion capillary viscometry characteristics, a mixture of the meat from the 2 sources was lower in all components released during the emulsion stability test. HT

89

[Semi-manufactured poultry products. General requirements.]
Czechoslovakia, Urad pro Normalizaci a Mereni
Czechoslovak Standard CSN 57 3101, 7pp (1976) [Cs]

This standard stipulates the temp. for chilling and freezing of semi-manufactured poultry products, e.g. oven-ready birds (to < 12° and -12° C in the centre, resp.); shipping temp. (> 2° and not above -10° C, resp.); packaging (polyethylene bags, paper bags with polyethylene liner); package declaration; and storage (-1° to -4° C for 7 days for chilled, below -16° C for 180 days for frozen, both at 85-90% RH). HBr

90

Irradiation of meats and poultry. [Review]
Urbain, W. M.
Food Irradiation Information No. 8, 14-30 (1978) [50 ref. En] [Michigan State Univ., East Lansing, Michigan 48824, USA]

The preservation of meats and poultry by radappertization or radurization, and the inactivation of pathogenic bacteria, parasites or viruses by radicidation are reviewed. The key information for radappertization (destruction of spoilage microorganisms and food-borne pathogens) is the min. radiation dose (MRD), based on the most radiation-resistant organisms (i.e. Clostridium botulinum spores). Data are presented on experimentally determined MRD, vitamin retention, acceptance, chemical changes and effects of irradiation temp. on radiolytic volatiles and flavour score of irradiated meat. Radurization aims at extending product or market life through reduction of the microbial population, and uses lower radiation doses (i.e. around 200 krad, vs. 2500 to 4300 for radappertization). In conjunction with heat treatment, it can extend the market life without adverse effects on flavour. Radicidation requires high radiation doses likely to produce objectionable flavour and involve high irradiation costs. RM

91

[Processing of deboned poultry meat.] Zur Verarbeitung von Geflügelresifleisch.
Ring, C.; Krause, G.; Kottler, L.
Schlachten und Vermarkten 78 (1) 13-14 (1978) [De, en, fr]

Various systems for mechanical separation of meat from bones are described with special emphasis on requirements relating to hygiene and meat technology. No declaration nor limit on the use of deboned meat is necessary, as this is regulated by the guidelines of the German Food

Manual. Products for frying or grilling, formed from deboned poultry meat, e.g. 'Hähnchen-Formschnitzel', must be declared, to avoid misleading the consumers. RM

92

Poultry carcass-treating apparatus.
Blair, J. M.; Sebring, M.; Underwood, W. H.; Bley, W. P. (Armour & Co.)
United States Patent 4 074 389 (1978) [En]
Apparatus is described for maintaining the position of poultry carcasses during processing. IFT

93

Fowl gizzard separator.
Meyn, P.
United States Patent 4 074 390 (1978) [En]
Apparatus is described for separating the gizzard from a package of interconnected entrails removed from a poultry carcass. IFT

94

[The effect of DDT dose on the organoleptic properties of fat goose liver.]
Gawecka, J.
Zeszyty Naukowe, Akademia Ekonomiczna w Poznaniu Seria I, Prace z Zakresu Towarotnawstwa i Chemii No. 69, 20-22 (1976) [Pl, ru, en]
54 White Italian geese were used in a study on effects of diets containing DDT on fat liver quality. The geese were fed identically up to 18 wk of age, then divided into 3 groups which were fed corn diets containing (i) 0.012, (ii) 0.832 or (iii) 8.22 mg DDT/kg. The proportion of class 1 + class 2 fatty livers was 62.5, 41.18 and 18.75% for the groups fed (i), (ii) and (iii), resp. STI

95

Influence of divalent cations on poultry meat emulsions and sausages.
Whiting, R. C.; Richards, J. F.
Journal of Food Science 43 (2) 312-314, 330 (1978) [24 ref. En] [Dep. of Food Sci., Univ. of British Columbia, Vancouver, British Columbia V6T 1W5, Canada]
The emulsifying capacity of a 3% NaCl extract of chicken white muscle was decreased by 10mM $CuCl_2$, slightly increased by 10mM $FeCl_2$, and greatly increased by 10mM $ZnCl_2$. Ca and other cation chlorides studied had no effect. Zn enhancement was optimum at pH 5.5. At pH values >4.3, 10mM Cu would not form an emulsion but 1mM Cu increased emulsifying capacity as pH increased. When 2.2mM Zn^{2+} or Cu^{2+} was included in the formulation, the force required to shear sausages prepared from red and white muscle was reduced by half and the water and fat losses on cooking were large. Addition of Ca^{2+} or Fe^{2+} to the sausage emulsion was less detrimental. IFT

96

[Studies on requirements of Muscovy ducks (Cairina moschata domestica L.) for crude protein and energy levels in the fattening diet.]
Orientierende Untersuchungen über die Anforderungen von Moschusenten (Cairina moschata domestica L.) an den Rohprotein- und Energiegehalt des Mastfutters.
Jeroch, H.; Schubert, R.; Prinz, M.; Petzold, M.; Hennig, A.
Archiv für Tierernährung 27 (11) 681-687 (1977) [5 ref. De, en, ru] [Fachgruppe Tierernährung, Sektion Tierproduktion & Veterinärmed., Karl-Marx-Univ., Leipzig, Jena, German Democratic Republic]
Groups of male and female Muscovy ducks (fed identically for the first 3 wk) were used in studies on the energy content (480, 555 or 630 energy feed units/kg feed) and crude protein content (140 or 180 g/kg feed) on performance and carcass quality. The males were slaughtered at 11 wk and the females at 10 wk of age. Tables of data for fattening performance and carcass quality (wt. and % of total fat, breast meat, total meat and total skin) are given for all 6 energy level/protein content combinations. The results show that fatness increased with increasing energy content of the diet, and that the higher protein contents gave higher live wt. gain and meat yield. AJDW

97

[Experiences in applying the poultry meat hygiene law.] Praktische Erfahrungen bei der Anwendung des Geflügelfleischhygienegesetzes.
Trautwein, H.
Schlachten und Vermarkten 78 (1) 6-11 (1978) [10 ref. De, en, fr] [Justinus-Kerner-Strasse 25, 7440 Nürtingen, Federal Republic of Germany]
The author discusses some points relating to the hygienic quality of poultry meat. The sources of the recent increase in salmonellosis must be looked for not only in slaughtering plants but also in poultry farms. Other points raised are the importance of live poultry inspection, of pre-slaughter handling (e.g. transport conditions), and slaughtering hygiene. Practical recommendations are made for supervising poultry slaughterhouses. RM

98

[Technico-chemical inspection in the meat and poultry processing industries.] Tekhnokhimicheskii kontrol' v myasnoi i ptitsepererabatyvayushchei promyshlennosti. [Book]
Matrozova, S. I.
182pp. (1977) [Ru] Moscow, USSR; Pishchevaya Promyshlennost'. Price 0.40r
The subject is covered under the following headings: General methods of investigation (pp. 6-38); Inspection of the preslaughter condition of cattle and poultry; collecting, preserving and storing of endocrine-fermenting material; control of processing and quality of stabilization of hides (pp.

39-61); Inspection of freezing and storage conditions for meat, semi-manufactured products and poultry; detn. of freshness of meat and poultry (pp. 62-85); Inspection of manufacture and control of quality of smoked pork products and sausage-type products (pp. 86-104); Control of manufacture of canned meats; quality inspection (pp. 105-120); Control of manufacture and quality of melted edible fats from animals (pp. 121-132); Control of manufacture and quality of non-edible fats and fodder meal (pp. 133-144); Control of production of edible gels and bone glue (pp. 145-159); Control of manufacture and quality of blood products (pp. 160-171); and Control of manufacture and quality of bulk eggs and dried egg (pp. 172-180). STI

99

Code of practice for hygienic practice for poultry processing.
Barbados, Barbados National Standards Institution
Barbados National Standards **BNS CP 4**, 22pp. (1977) [En] [Culloden Road, St Michael, Barbados, West Indies]

This code is an advisory guide to the poultry processing industry, and deals with raw material requirements, plant facilities and operating requirements, and end product specifications. AL

100

[Use of drugs in poultry production and residues in eggs and meat.] Arzneimitteleinsatz in der Geflügelproduktion und Rückstände im Ei and Geflügelfleisch. [Review]
Fleischle, W.
Berichte über Landwirtschaft **55** (4) 855-864 (1977, publ. 1978) [85 ref. De, en, fr] [Inst. für Tiermed. & Tierhygiene, Univ. Hohenheim, Postfach 106/06200, 7000 Stuttgart 70, Federal Republic of Germany]

Use of drugs in poultry production, legal aspects of their use, and detection methods are considered in the 1st part of this review, and 8 classes of drugs used in poultry production are listed, with ref. for legal aspects and detection methods. The 2nd part considers the problem of residues in eggs and poultry meat; 38 drugs are listed with ref. relevant to the presence of each in eggs or meat. Presence of residues in eggs is considered of greater concern than in poultry meat, as egg consumption is higher; results show that levels of residues are as high or higher than those in meat. Official examination of eggs for residues is recommended. DIH

101

Pre-cooked half-duckling concept basis of marketing success.
Anon.
Quick Frozen Foods **40** (3) 36-38, 55 (1977) [En]

Serenade Foods, Inc., an affiliate of Maple Leaf Farms, of Milford, Indiana is merchandising its new fully oven-roasted, semi-boneless half duckling, which can be finished for service in <30 min. The product is completely boned except for the first wing portion and leg bone, to maintain configuration. It can be stored in the restaurant freezer until ordered, eliminating waste or spoilage that can occur in the preparation of conventional duckling. Each 8- to 10-oz portion includes one-half duckling. 12 portions are packed in a box, and each half is packaged in a heat-sealed polyethylene bag to preserve freshness. The duckling is popular for large dinners and banquets. VJG

102

[Investigations into lead and cadmium contents in samples of meat and organs from poultry.] Untersuchungen auf den Gehalt an Blei und Cadmium in Fleisch-und Organproben von Geflügel einschliesslich Wassergeflügel.
Holm, J.
Fleischwirtschaft **58** (2) 299-300; 242 (1978) [6 ref. De, en] [Staatliches Veterinäruntersuchungsamt, Dresdenstrasse 6, 3300 Braunschweig, Federal Republic of Germany]

50-100 each of young chickens, broilers, boiling fowls, turkeys, ducks and geese were examined for Pb and Cd residues in meat and kidneys, and in some, also in liver. Samples were prepared by wet digestion with $HNO_3/HClO_3$ and analysed by AAS. Toxic metal contents of muscle were slightly high in turkeys, ducks and geese than in fowls. When classifying organs by their toxic metal contents, kidneys of 1.4% of broilers, 2.1% of boiling fowls, 4.9% of ducks, 0% of turkeys and 1.0% of geese contained >0.5 p.p.m. Pb (as did 5.0% of boiling fowl and 1.7% of goose livers), but Cd contents were much higher: in kidneys, 39% of boiling fowls, 69% of turkeys, 72% of ducks and 13% of geese exceeded 0.5 p.p.m., as well as 20% of boiling fowl and 17% of goose livers. If kidneys are discarded and livers separately evaluated, poultry meat is only very slightly contaminated. [See also FSTA (1976) 8 11S1897 and (1977) 9 6S978.] RM

103

[Chilling sub-scald poultry.] Kühlung von sub-scald Schlachtgeflügel.
Veerkamp, C. H.; Hofmans, G. J. P.
Schlachten und Vermarkten **78** (1) 15-17 (1978) [10 ref. De, en, fr] [Inst. für Geflügelforschung 'Het Spelderholt', Beekbergen, Netherlands]

The issue in 1971 of the directive No. 71/118/EEC, including the ban on spin-chilling of poultry has stimulated research on poultry chilling. For subscald poultry, water chilling processes seem to be the only feasible methods. Countercurrent chilling is compared with one-stage and two-stage water or water-ice chilling operations in a Perfect Mixer. The following operational parameters were obtained for one-stage, two-stage and countercurrent chilling resp.: chilling time 10, 20 and 30 min; water consumption 1, 3 and 1.5 l./kg; ice consumption 0.5, 0.3 and 0 kg/kg; cooling capacity 167, 100 and 59 kJ/kg; and reduction of

microbial count 54, 79 and 84%. These results justify the choice of the countercurrent chilling process. RM

104

[Hygienic evaluation of animal husbandry products obtained after use of the growth stimulants vitamitsin and kormarin.]
Priputina, L. S.; Obbarius, I. D.; Onikienko, P. B.; Ol'shevskaya, O. D.; Nikol'skaya, A. E.; Matvienko, I. N.
Voprosy Pitaniya No. 3, 84-85 (1978) [Ru] [Kievskii Inst. Gigieny Pitaniya, Kiev, USSR]

Vitamitsin and kormarin, freeze-dried products obtained from deep fermentation of Actinomycetes aureoverticillus and Act. aurigineus, resp., were added to hen feed at concn. of 400-500 g/t (or 20-100 mg/kg bird live wt.). No organoleptic effects on the poultry meat and no residual concn. in the internal organs or tissues were observed. No untoward effects were observed in laboratory animals fed the meat of ducks and hens fed the growth stimulants over protracted periods. HBr

105

Characterization of poultry isolates of Staphylococcus aureus by a new set of poultry phages.
Gibbs, P. A.; Patterson, J. T.; Thompson, J. K.
Journal of Applied Bacteriology 44 (3) 387-400 (1978) [49 ref. En] [Agric. & Food Bact. Res. Div., Dep. of Agric. for N. Ireland, Newforge Lane, Belfast BT9 5PX, UK]

Strains of Staphylococcus aureus were isolated on Baird-Parker's selective agar from processed poultry and processing plants and confirmed as coagulase-positive with human plasma. The Staph. aureus strains were non-typable with the International (human) phage set. 3 main groups of strains were distinguished, and biochemical tests confirmed these divisions, with members of each group exhibiting characteristics of both 'human' and 'animal' strains. Strains belonging to all poultry phage groups produced detectable levels of enterotoxin. 24 strains (46%) were enterotoxigenic, 18 produced enterotoxin A only, 2 enterotoxin D only, 3 produced enterotoxins C and D, and 1 produced enterotoxins A, C and D. A further 24 strains showed precipitation lines with antiserum A with forming lines of identity. SP

106

The distribution of Staphylococcus aureus in a poultry processing plant.
Gibbs, P. A.; Patterson, J. T.; Thompson, J. K.
Journal of Applied Bacteriology 44 (3) 401-410 (1978) [20 ref. En] [Agric. & Food Bact. Res. Div., Dep. of Agric. for N. Ireland, Newforge Lane, Belfast BT9 5PX, UK]

Strains of Staphylococcus aureus were isolated from hens and turkeys at a poultry processing plant, during and after processing, using sterile swabs. Strains were isolated from feathers, plant equipment, and rubber gloves used for plucking. In general, between 1969 and 1976, 50-100% of carcasses tested were carriers of Staph. aureus. A set of phages previously isolated from poultry strains of Staph. aureus [see preceding abstr.] was used to type the isolates recovered from the above. Certain poultry phage types were found to be associated with the 'live birds' rather than the processed carcasses, and were mostly of strains A and B_2. Strains lysed by phages from this group may represent a specific 'poultry' biotype, of non-human origin. Strains of Staph. aureus lysed by Group C poultry phages predominated on the finished carcasses, feathers accumulating in the 2nd plucker, and on plant equipment. It was concluded that strains A and B_2 were removed from the surface of the carcasses during scalding and that these were replaced with strains B_1 and C by the 1st and 2nd plucker. SP

107

Poultry meat hygiene and inspection. [Book]
Bremner, A. S.
186pp. ISBN 0-7020-0654-8 (1977) [7 ref. En] London, UK; Cassell & Collier Macmillan Publishers Ltd. Price £2.95 [Min. of Agric., Fisheries & Food, State Vet. Service, Nottingham, UK]

This textbook for poultry inspection personnel includes the following chapters: Poultry production: selected aspects (pp. 1-14); Avian anatomy (pp. 15-22); Construction and layout of an approved poultry slaughter plant (pp. 23-32); Technical aspects of slaughtering and dressing poultry (pp. 33-56); Bacteriology of poultry meat (pp. 57-73); Ante-mortem inspection (pp. 74-88); Hygiene of production I (pp. 89-104); Hygiene of production II (pp. 105-122); Post-mortem inspection: techniques and processing faults (pp. 123-135); Post-mortem inspection: disease conditions (pp. 136-159); Additional processing (pp. 160-166); and Storage and transport of poultry meat (pp. 167-171). An appendix gives a discussion of the UK Poultry Meat (Hygiene) Regulations of 1976. A 7-pp. subject index is included. AJDW

108

[Effects of scalding temperature and the cooling process on the quality of broiler and turkey meat.]
Auswirkungen von Brühtemperatur und Kühlverfahren auf die Fleischqualität bei Broilern und Puten.
Ristic, M.
Fleischwirtschaft 58 (5) 811-816; 741 (1978) [21 ref. De, en] [Bundesanstalt für Fleischforschung, 8650 Kulmbach, Federal Republic of Germany]

Experiments with 460 broilers and 40 turkeys showed that chilling media (chiller and/or tunnel), storage time and lower scalding temp. (48-50° or 50-52°, instead of 56-58°C) had positive effects on broiler carcasses (wt. loss, pH, brightness, juice holding capacity, sensory properties), allowing up

to 12 days' storage at constant temp. of +1°C for perfectly eviscerated carcasses. Fresh poultry retained very good quality for 3 days (short storage life), good quality for 6 days (medium storage life) and satisfactory quality 12 days (long storage life). In spite of a slight but significant increase in total bacterial count, broilers could be stored up to 9 days at 0° to +1°C, but should be well dried before storage. The pH of turkey meat reached a min. at 3 h post mortem and then rose throughout storage. The highest scores for juiciness and tenderness were given to boiled meat after 9 days', grilled meat after 6 days storage. [From En summ.] RM

109

Studies on duck organs, glands and meat production.
Kamar, G. A. R.; Yamani, K. A.
Egyptian Journal of Animal Production 15 (1) 77-94 (1975) [7 ref. En, ar] [Fac. of Agric., Cairo Univ., Giza, Egypt]

Comparative studies were conducted on the tissue and organ wt. and meat yield of 5 males and 5 females of each of the following duck breeds: Sudani (S), Rouen (R) and Pekin (P). The ducks were 12 months old at slaughter. Tables of data are given for body wt., wt. of various organs, eviscerated carcass wt., meat and bone wt and % in the wings, breast, legs and back + pelvis, and the yield of total meat, total bones, giblets, abdominal fat, and total edible material. Eviscerated carcass % was not significantly influenced by breed; however, it was significantly influenced by sex in S and R, males having higher values than females. S had higher wt. and % of wing and breast meat than the other 2 breeds; P had the highest % leg meat; R had considerably lower wt. of back + pelvis meat than S or P. Of males, S had the highest and P the lowest % total meat yield; of females, P and S had considerably higher % total meat yields than R. Females had higher % giblets than males. S birds of both sexes having lower % giblets than the other breeds. Female P and S birds had higher % abdominal fat than the corresponding males; the reverse was true for R. Breed and sex effects on wt. and % of edible material were small. AJDW

110

[Slaughtered poultry, sampling, testing and classification.]
Hungary, Magyar Szabvanyugyi Hivatal
Hungarian Standard MSZ 6920/3-75, 6pp. (1975) [Hu]

111

[Poultry for slaughter.]
Hungary, Magyar Szabvanyugyi Hivatal
Hungarian Standard MSZ 6918-77, 8pp. (1977) [Hu]

112

Japanese fowl-rearing and its products. [Thesis; L'elevage et les produits avicoles nippons, 137pp., Fr]
Bonvalet, J.-J.
Dissertation Abstracts International, C 37 (4) 683 (1977) [En] [Univ. de Lyon I, Lyon, France]

Eggs, meats and derived products are discussed with reference to the importance of their production and market characteristics, external trade and national outlets, and the increasing importance of economic exchange with New Zealand and Australia. The long and short term future of the industry is assessed, and new products, methods of presentation and the introduction of new fowl strains are discussed. AS

113

Control of nonspecific staining in the fluorescent antibody technique for the detection of salmonellae in foods.
Swaminathan, B.; Ayres, J. C.; Williams, J. E.
Applied and Environmental Microbiology 35 (5) 911-919 (1978) [40 ref. En] [Dep. of Food Sci., Univ. of Georgia, Athens, Georgia 30602, USA]

A fluorescent antibody conjugate, prepared from the IgG (immunoglobulin G) fraction of Salmonella polyvalent flagellar antiserum, gave better specific staining intensities and significantly lower nonspecific staining than did conjugates prepared from globulin fractions of ammonium sulphate-fractionated Salmonella polyvalent antisera. IgG was purified by affinity chromatography against protein A, a normal cell wall component of Staphylococcus aureus. Affinity chromatography yielded high-purity IgG in a one-step purification procedure. The conjugate prepared from affinity-purified IgG was compared with commercially available fluorescent antibody conjugates for the detection of salmonellae in retail samplings of meats and poultry and gave better correlations with the cultural method than did the commercial conjugates. AS

114

[Studies on the energy and crude protein requirement of young geese. II. Effects of the energy and crude protein contents of the fattening diet on carcass quality.] Untersuchungen zum Energie- und Rohproteinbedarf von Jungmastgänsen. II. Einfluss eines unterschiedlichen Energie- und Rohproteingehaltes des Mastfutters auf die Schlachtkörperqualität.
Jeroch, H.; Schubert, R.; Prinz, M.; Petzold, M.
Archiv für Tierernährung 28 (2) 111-122 (1978) [4 ref. De, en, ru] [Sektion Tierproduktion & Veterinärmed., Karl-Marx-Univ., Leipzig, German Democratic Republic]

Studies on the effect of the net energy and crude protein contents of the diet on the carcass quality of 480 young Deutsche Legegans × White Italian geese, slaughtered at <70 days of age, are described.

Data are given for the yield of ready-to-cook carcass, breast meat, thigh meat and total meat, quantities of perivisceral and abdominal fat and skin, bristliness, and the protein and fat contents of the meat and the skin. Tables, graphs and block diagrams of results are given. Yields of meat tended to increase with increasing protein level in the diet; wt. gain increased with increasing dietary energy content, the extra gain being almost exclusively adipose tissue. High dietary energy level also induced earlier juvenile moulting, resulting in increased bristliness of the carcass. Fat content of the meat tended to increase with increasing dietary energy level, and to decrease slightly with increasing dietary protein level. Protein content of the meat increased with increasing dietary protein level. AJDW

115

Machine for cutting poultry into selectively variable portions.

Duncan, W. D.; Duncan, C. L. (Duncan Creations Inc.)

United States Patent 4 083 083 (1978) [En]

Apparatus automatically cuts eviscerated poultry carcasses into a number of pre-selected groups of portions under the control of a single operator. Each of the groups of portions consists of a whole poultry carcass severed into separate predetermined pieces. IFT

116

[Restricted feeding of male Muscovy ducklings from 8 to 12 weeks of age.]

Leclercq, B.; Carville, H. de

Annales de Zootechnie **27** (1) 1-7 (1978) [5 ref. Fr, en] [Sta. de Recherches Avicoles, Cent. de Recherches de Tours, INRA, Nouzilly 37380 Monnaie, France]

A total of 200 male Muscovy ducklings was used in studies on effects of feed restriction on growth and carcass quality. Groups were fed a control diet, or had their feed allowance restricted by 5 or 20% from 8 wk of age up to slaughter at 10 or 12 wk of age. Tables of results are given. Feed restriction delayed growth and significantly reduced lipid concn. in the carcass, from 22.4% (ad lib. fed) to 16.6% (20% feed restriction) at 12 wk of age. Carcass yields were little affected by feed restriction; wt. of the carcass, breast muscle and thigh muscle were reduced by feed restriction. AJDW

117

[Determination of the bone content in mechanically deboned meat from pork bones.] Bestimmung des Knochengehaltes in Separatorenfleisch aus Schweineknochen.

Schulze, K.

Archiv für Lebensmittelhygiene **28** (5) 166-169 (1977) [19 ref. De, en] [Veterinäruntersuchungsanstalt, Lagerstrasse 36, 2000 Hamburg 6, Federal Republic of Germany]

In model investigations conversion equations and factors were calculated which allow detn. of the bone content in a product separated from pork ribs and vertebrae. The sedimentation [Schaal & Anhalt, Archiv für Lebensmittelhygiene (1974) **25**, 164-166] and KOH [Gerats & Terbijhe, ibid., (1975) **26**, 230-231] methods were used. The conversion factors for meat separated from pork bones are lower than those for poultry meat. As the composition and structure of the bones vary, conversions to 'normal substance bone content' present problems and are possible only if the type of bone material under investigation is known. It is therefore appropriate to use a standardized assay method instead of converting to normal substance bone content. AS

118

Antimicrobial efficacy of a potassium sorbate dip on freshly processed poultry.

Robach, M. C.; Ivey, F. J.

Journal of Food Protection **41** (4) 284-288 (1978) [12 ref. En] [Monsanto Co., 800 North Lindbergh Boulevard, St. Louis, Missouri 63166, USA]

Fresh poultry breasts were dipped in a solution containing either 0, 2.5, 5.0 or 10.0% potassium sorbate for 1 min. Another lot of fresh poultry breasts was dipped in a suspension of either 10^3 or 10^5 cells of a mixture of 3 strains of Salmonella/ml before being dipped in one of the potassium sorbate solutions. Use of a potassium sorbate dip significantly reduced the total number of viable bacteria on the poultry parts when compared to the untreated control parts after 7 days storage at 10°C and after 8 days at 6°C. Use of a 10.0% sorbate dip significantly reduced the total plate count as related to the total plate count of the control parts after 5 days storage at 22°C. Application of a 10.0% sorbate dip to inoculated parts resulted in a significantly lower Salmonella count than that of the untreated parts after 7 days storage at 10°C, and $\geqslant$ 5.0% sorbate dip markedly reduced the growth rate of the Salmonella at 10° and 22°C when compared to the growth rate of the Salmonella on control parts. AS

119

[Engineering aspects of commercial poultry processing.] Inžinierstvo hydinarskej priemyselnej vyroby. [Book]

Bobis, L.

207pp. (1977) [Sk] Bratislava, Czechoslovakia; Vyskumny Ustav Hydinarskeho Priemyslu

The book deals with poultry meat production, with special attention to unconventional processes. The following chapters are included: Poultry processing and improved human nutrition (pp. 5-31); Prognosis of future development (pp. 32-67); and Engineering aspects of commercial poultry processing (pp. 68-200). STI

120

A contribution to the study of slaughtering and evisceration of fatty geese. [Thesis; Contribution a l'etude de l'abattage et de l'evisceration des palmipedes gras, Fr]
Berthie, M.
Dissertation Abstracts International, C 37 (4) 714 (1977) [En] [Univ. de Toulouse III, Toulouse, France]

New techniques in raising and fattening geese permit the fattening of birds all year round, ensuring a regular supply and more equable prices of goose liver, and assuring the consumer of even quality. Remaining problems are outlined, and high standards of raising and hygienic conditions of slaughtering and evisceration which now exist are also discussed. AS

121

Detection of volatile sulfide-producing bacteria isolated from poultry-processing plants.
McMeekin, T. A.; Gibbs, P. A.; Patterson, J. T.
Applied and Environmental Microbiology 35 (6) 1216-1218 (1978) [16 ref. En] [Dep. of Agric. Sci., Univ. of Tasmania, Hobart, Tasmania 7001, Australia]

A technique using filter paper strips inpregnated with 5-5'dithiobis-nitrobenzoic acid was developed to allow the detection of bacteria (isolated from poultry-processing environs) which produced volatile sulphides (H_2S, CH_3SH, $[CH_3]_2S$) The technique is preferred to conventional methods in that it allows the detection of volatile organic sulphides in addition to H_2S. AS

122

[Studies on the fatty acid composition of duck meat.]
Nam, H. K.
Korean Journal of Nutrition 10 (1) 34-37 (1977) [8 ref. Ko, en] [Gwangju Seowon Junior Coll., Gwangju, Korea]

The proximate composition of duck meat is stated to be 64.87% moisture, 19.06% protein, 17.05% fat and 1.02% ash. Chemical characteristics of the fat were: saponification number 201.5; acid number 5.01; I number 50.1; and carbonyl number 4.5. Fatty acid compositions as determined by gas chromatography for leg and breast resp. were: linolenic acid 1.6% and 1.7%; linoleic acid 19.9% and 17.2%; oleic acid 45.9% and 51.2%; stearic acid 3.1% and 3.3%; palmitic acid 17.2% and 17.1%; and myristic acid 0.12% and 0.17%. Total cholesterol and its ester contents were, resp., 200 and 120 mg% in blood, 260 and 156 mg% in breast fat, and 400 and 240 mg% in leg fat. KoSFoST

123

[Poultry meat. Chicken, duck, goose, turkey, and guinea-fowl carcasses. Technological requirements.]
Union of Soviet Socialist Republics.
Gosudarstvennyi Komitet Standartov
Soviet Standard GOST 21784-76, 8pp. (1976) [Ru]

This standard gives general organoleptic and quality requirements for poultry meat, and covers wt., testing, packaging, and storage. Chilled meat is to be stored at 0-2°C and 80-85% RH (for ≤5 days). Storage times for frozen poultry (RH 85-95%) are given; they range from 3-5 months for unpackaged birds and 6-8 months for birds packaged in plastics film at -12°C to 10-12 months for unpackaged birds and 12-14 months for birds packaged in plastics film at ≤-25°C. KME

124

[Products of poultry meat processing. Poultry meat products. Cured poultry meat.]
Geflügelfleischerzeugnisse. Geflügelfleischwaren: Pökelwaren.
German Democratic Republic, Institut für Fleischwirtschaft der DDR
German Democratic Republic Standard TGL 32512/01, 4pp. (1976) [De]

This standard applies to (i) poultry meat products preserved by brining, drying and cold smoking, and (ii) 'Kassler' products, made by brining and hot smoking, and intended for consumption within a short period from day of manufacture. Storage conditions are RH 75-80% for both, and 0-10°C for (i) and 0-5°C for (ii); direct sunlight is to be avoided for both. HBr

CHICKENS

1

Modelling heat transfer in foods using the finite-element method.
Baerdemaeker, J. de; Singh, R. P.; Segerlind, L. J.
Journal of Food Process Engineering **1** (1) 37-50 (1977) [21 ref. En] [Dep. of Agric. Eng., Univ. of California, Davis, California, USA]

This paper illustrates applications of the finite-element method to the calculation of heat transfer in foodstuffs. It shows how the method can easily accomodate a wide variety of shapes, thermal properties and boundary conditions within a single simple programme, which can also be adapted for use in quality studies involving bacterial evaluation of nutrient degradation. Diffusion problems in solids can be studied with some minor modifications. Equations and graphs are given, together with worked examples on heat transfer in cylindrical cans, cooling of fruit, and cooking of a chicken leg. SP

2

Collaborative study comparing the spiral plate and aerobic plate count methods.
Gilchrist, J. E.; Donnelly, C. B.; Peeler, J. T.; Campbell, J. E.
Journal of the Association of Official Analytical Chemists **60** (4) 807-812 (1977) [7 ref. En] [Div. of Microbiol., FDA, 1090 Tusculum Avenue, Cincinnati, Ohio 45226, USA]

The spiral plate count method is a semiautomated plating technique that greatly reduces manpower and material costs normally associated with the pour plating technique. In this collaborative study, 8 laboratories compared the spiral and pour plating techniques, using 4 samples each of 3 products: frozen pumpkin pie, frozen chicken pot pie and shampoo. The results show that 10 of the 12 comparisons of means of the pour and spiral methods were not significantly different; 2 values were significant at $\alpha = 0.01$. Overall, the components of variance were less than that (0.012) of the current milk standard, and the replicate % coeff. of variation was satisfactory. This study indicates that the spiral plate method is an acceptable alternative to the pour plate method; the spiral plate method has been adopted as official first action. AS

3

The detection of polyphosphate in broiler chicken breast muscle.
Grey, T. C.; Robinson, D.; Jones, J. M.
Journal of the Science of Food and Agriculture **28** (9) 822-828 (1977) [7 ref. En] [ARC Food Res. Inst., Colney Lane, Norwich NR4 7UA, UK]

The relationship between the concn. of Na and P (as P_2O_5) in commercially processed broiler chicken breast muscle as a result of injection of various levels of sodium polyphosphate and NaCl was studied and a routine analytical method which can confirm the presence or absence of the addition of these chemicals was developed. The method is applicable to frozen thawed or cooked broilers and is independent of moisture and protein content. Since polyphosphates may contain K as well as Na salts, the relationship between these 2 elements in untreated commercially processed broiler breast muscle was also measured and compared with treated birds. The analytical procedure was applied to a survey of deep frozen broilers purchased from 3 local supermarkets. Untreated broilers gave P_2O_5/Na ratios in the range 8-16, treated chicken gave ratios in the range 3-6. AS

4

Comparative performance of rabbits and broilers.
Reddy, N. V.; Rao, D. R.; Chen, C. P.
Nutrition Reports International **16** (1) 133-138 (1977) [13 ref. En] [Dep. of Food Sci. & Tech., Alabama A&M Univ., Normal, Alabama 35762, USA]

The carcass characteristics and meat quality of rabbits and broiler chickens are compared. 30 New Zealand white rabbits and 150 Arbor-Acre male chicks were used. At the end of 8 wk rabbits and broilers were slaughtered and dressed carcass wt. and carcass quality were measured. A table of results is given. Values for rabbits and broilers respectively were carcass yield 58% and 80%; meat/bone ratio 3.5 and 3.0; moisture 71% and 68%; fat 7.9% and 11.0%; and protein 18.7% and 20%. Rabbit meat quality is comparable to that of chicken, and meat yields are high. It is concluded that the rabbit seems to have good potential as a meat animal. SP

5

Sampling carcasses and meat products. (In 'Proceedings of the 29th Annual Reciprocal Meat Conference' [see FSTA (1978) **10** 1S2].) [Lecture]
Vanderzant, C.; Carpenter, Z. L.; Smith, G. C.
pp. 258-267 (Undated) [17 ref. En] [Texas A&M Univ., College Station, Texas 77843, USA]

The limitations and problems of methods used for sampling carcasses and meat products to assess their microbiological condition are discussed. Methods of sampling, selection of test procedure, and variables within methods are presented in tabular form. Conditions which influence attachment on and detachment of bacteria from meat surfaces are discussed (with emphasis on poultry meats) under the following headings: effect of attachment time, concn. of bacteria in attachment medium, temp., pH and bacterial types on attachment; heat resistance of attached and unattached bacteria - effect of processing on bacteria acquired before and after scalding; detachment of attached bacteria - removal of the water film effect of spin and spray cooling; evaluation of sanitary procedures during processing - comparison of skin maceration, 'skin-dip', and 'whole carcass rinse' methods; effect of freezing and thawing on attachment of bacteria; and maceration and rinse drip procedures for the detn. of total counts, Enterobacteriaceae, Escherichia coli and

Salmonella on frozen broilers. It is concluded that a better understanding of attachment and detachment mechanisms may be helpful in designing techniques to reduce numbers of bacteria on meat surfaces, and maintaining them at reduced levels in order to extend shelf-life and reduce possible health hazards. SP

6

Effect of frozen storage on the microbiological status of dressed chickens. [Lecture]
Davey, G. R.; Chiew, R.; Edwards, R. A.
Bulletin de l'Institut International du Froid Annexe 1976-1, 211-218 (1976) [15 ref. En, fr] [School of Food Tech., Univ. of New South Wales, PO Box 1, Kensington, NSW 2033, Australia]

The effects of extended deep frozen storage on the microflora of chickens naturally contaminated with Salmonella, Staphylococcus aureus and Clostridium perfringens were studied. 200 commercially processed frozen chickens were held at -23.3° C and examined at 3-monthly intervals over 27 months. Total aerobic plate counts decreased most significantly after 15 months (survival rates as % of original counts were 85.1% at 12 months and 26.9% at 27 months). High initial Staph. aureus infections (log mean count 5.5/carcass) decreased rapidly to 85% survival after 3 months, 0.46% after 27 months; the % survival of salmonellae dropped to 7.9% at 6 months and 0.9% after 27 months; vegetative cells of Cl. perfringens fell from a mean of 20.5 cells/carcass to 1.7 at 27 months (8% survival) and no spores were recovered from any sample. The significance of the survival of pathogens in relation to the safety of frozen foods is discussed. [See FSTA (1978) **10** 1E2.] RM

7

[Lead contents in the feed and in tissues of laying hens.]
Renon, P.; Cantoni, C.
Archivio Veterinario Italiano **28** (1/2) 49-51 (1977) [30 ref. It, en] [Istituto di Ispezione degli Alimenti di Origine Anim., Univ. degli Studi di Milano, Milan, Italy]

Data are given for Pb concn. in the tissues and eggs of 20 laying hens which had been fed diets containing 5 p.p.m. Pb for 6 months. Mean values (DM basis) were (p.p.m.): muscle 1.23; liver 1.44; bone 9.34; egg yolk 0.46; and egg white 0.74. AJDW

8

Flavor and textural changes in radappertized chicken as affected by irradiation temperature, NaCl and phosphate additions.
Shults, G. W.; Cohen, J. S.; Mason, V. C.; Wierbicki, E.
Journal of Food Science **42** (4) 885-889 (1977) [21 ref. En] [Radiation Preservation of Food Div., US Army Natick R&D Command, Natick, Massachusetts 01760, USA]

The effects of sodium tripolyphosphate (TPP), tetrasodium pyrophosphate (PP), a mixture of TPP and hexametaphosphate (HMP), and NaCl additions in irradiated boneless chicken rolls were studied. Temp. during irradiation were 0° C, -30° C and -80° C, and all samples received a 45-56 kJ/kg dose. Samples were evaluated for sensory characteristics and preference by technological or consumer type panels. Textural differences were determined using a Kramer Shear Press. Reflectance values at 640 nm were measured. The sensory characteristics and preference ratings of the chicken rolls were significantly affected by temp. during irradiation. Samples irradiated at 0° C were rated lower in preference and higher for off-odour and irradiation flavour. No significant differences were found between samples irradiated in the range -30° C to -80° C. Shear press values increased and reflectance values decreased with the lowering of irradiation temp. The addition of 0.5% NaCl with 0.5% TPP significantly improved the preference ratings of irradiated chicken rolls. No differences in the sensory characteristics were found between roll samples with 0.5% additions of TPP, PP, or a TPP and HMP combination. Shear press values were significantly affected by the addition of NaCl and TPP in both irradiated and nonirradiated samples. IFT

9

[Effect of dietary energy source (glucose or corn oil) on the composition and phosphorylase activity of pectoralis superficialis muscle of growing chicks.]
Garcia, F.; Achmarc, C. R.
Ciencia e Investigacion Agraria **3** (4) 161-167 (1976) [29 ref. Es] [Dep. de Zootecnia, Univ. Catolica de Chile, Santiago, Chile]

97 New Hampshire chicks were used in a 4-wk feeding trial conducted to evaluate effects of energy source in the diet on the composition and enzyme activity in muscle tissue. 3 diets were studied, containing: (i) (control) 48.51% glucose, 5.00% corn oil; (ii) 59.25% glucose, 1.00% corn oil; and (iii) 5.53% glucose, 21.00% corn oil. Tables of results are given, including data for breast muscle, heart and liver wt., and the concn. of glycogen, protein and fat in the breast muscle. The results show that diet (iii) gave significantly higher protein concn. and lower fat concn. in the breast muscle than (i) or (ii); (ii) gave significantly lower fat concn. than (i). AJDW

10

Studies on radurization of chicken meat. (In 'Use of radiations and radioisotopes in studies of animal production' [see FSTA (1978) **10** 2G58].) [Lecture]
Harikumar, P.; Ninjoor, V.; Kumta, U. S.
pp. 411-420 (Undated) [20 ref. En] [Biochem. & Food Tech. Div., Bhabha Atomic Res. Cent., Trombay, Bombay 400 085, India]

Samples of leg and breast muscle from White Leghorn chickens were packaged in air or under vacuum, irradiated at 0.1 or 0.25 Mrad, and stored

for ≤20 days at 0-4°C. At intervals during storage, organoleptic properties, TBA values and concn. of trimethylamine N,and total volatile basic N were determined. Graphs of results are given. The results show that non-irradiated samples had a storage life ≤10 days; irradiated vaccum-packaged samples were acceptable for ≤20 days. The organoleptic properties of samples irradiated at 0.1 Mrad were superior to those of samples irradiated at 0.25 Mrad due to stronger 'radiation odour' in the latter. Concn. of total volatile basic N and trimethylamine N were inversely related to organoleptic quality. Oxidative reactions during storage were greater in samples packaged in air than in vacuum-packaged samples, and were greater in leg than in breast muscle. AJDW

11

Evidence for differences in post mortem intramuscular phospholipase activity in several muscle types.

Currie, R. W.; Wolfe, F. H.

Meat Science **1** (3) 185-193 (1977) [33 ref. En] [Dep. of Food Sci., Univ. of Alberta, Edmonton, Alberta, Canada]

Neutral and polar lipids were analysed in chicken breast and leg muscle (fresh, or aged for 168 h) and in pork semitendinosus muscle (fresh, or aged for 72 or 168 h). Tables of data are given for the concn. of individual neutral lipid fractions (triglycerides, free fatty acids, sterols, sterol esters, diglycerides and monoglycerides) and polar lipid fractions (phosphatidyl serine, phosphatidyl inositol, lysophosphatidyl choline, lysophosphatidyl ethanolamine, sphingomyelin, phosphatidyl choline, phosphatidyl ethanolamine, diphosphatidyl glycerol) in these samples, together with a detailed analysis of fatty acids in neutral and polar lipids of porcine semitendinosus muscle. The results show appreciable phospholipase A activity in chicken breast muscle, little phospholipase A activity in chicken leg muscle, and no detectable phospholipase A activity in porcine muscle. These differences are discussed in relation to the sarcotubular systems in red and white muscle fibres. AJDW

12

[Rapid spectrophotometric methods for determination of the protein content of meat and meat products.] Spektrophotometrische Schnellbestimmung des Eiweissgehalts von Fleisch und Fleischerzeugnissen.

Gabor, E.

Fleisch **31** (6) 109-111 (1977) [6 ref. De] [Lehrstuhl für Chem., Hochschule für Lebensmittelind., Szeged, Hungary]

A rapid spectrophotometric method for detn. of the protein content of meat was developed, based on the total dissolution of protein and the detn. of the UV extinction value. Calibration curves and regression equations for chicken, pork and beef were determined. Absorption max. defined for chicken, pork, beef and minced meat were 241, 242, 240 and 256 nm, resp. Calibration curve graphs, tables of extinction values and protein contents for chicken meat/pork fat, pork meat/pork fat and beef meat/pork fat mixtures (each in 5 proportions between 1.0:0 and 0.2:0.8) and corresponding regression equations are given. The accuracy of the method was tested statistically using F- and t-tests. Applications of this new 15-20 min method of analysis are discussed. IN

13

Characteristics of microorganisms associated with hot-packaged, washed and immersion chilled broilers.

Arafa, A. S.; Chen, T. C.

Poultry Science **56** (3) 918-923 (1977) [17 ref. En] [MAFES, Poultry Sci. Dep., Mississippi State Univ., Mississippi State, Mississippi 39762, USA]

The shelf-life and microbial characteristics of cut-up hot-packaged, washed and immersion chilled broilers were investigated. Hot-packaging of broilers resulted in a 5-7 day increase in shelf-life as compared to those which had been immersion chilled. Washed parts had an intermediate shelf-life between the other 2 treatments. Physiological and biochemical characteristics of the microflora from fresh parts showed that the incidence of microbial groups was different among treatments. Alcaligenes and Achromobacter were the predominant psychrotrophs on immersion-chilled poultry; Staphylococcus and Alcaligenes were the predominant psychrotrophs on the fresh hot-packaged parts. The development pattern of the spoilage-type microorganisms was similar in the hot-packaged, washed and the immersion chilled broiler parts. Pseudomonas followed by Enterobacter were the major 2 genera isolated from spoiled poultry meat. AS

14

Residues in broiler chickens fed low levels of hexachlorobenzene.

Reed, D. L.; Booth, N. H.; Bush, P. B.; Goetsch, D. D.; Kiker, J.

Poultry Science **56** (3) 908-911 (1977) [9 ref. En] [Coll. of Vet. Med., Univ. of Georgia, Athens, Georgia 30602, USA]

Male broiler chicks were fed diets containing 0, 6×10^{-4}, 6×10^{-3}, 0.03 and 0.12 p.p.m. hexachlorobenzene (HCB) for 8 wk. HCB accumulation in tissues was linearly dependent on concn. in the diet. Accumulation was greatest in the adipose tissue, followed by the heart, gizzard, leg, kidney, liver and breast. Levels of HCB in adipose tissue were 11-18 × greater than diet concn. After 7 wk of HCB feeding and a withdrawal period of 5 wk, 0.5 p.p.m. HCB remained in the adipose tissue of birds fed 0.12 p.p.m. HCB. JRR

15

Effect of supplemental methionine in broiler diets on dressing percentage and carcass composition.
Prasad, A.; Sadagopan, V. R.
Indian Journal of Nutrition and Dietetics 13 (12) 406-410 (1976) [14 ref. En] [Div. of Poultry Res., Indian Vet. Res. Inst., Izatnagar, Uttar Pradesh, India]

A factorial design experiment using 216 commercial cross-bred broiler chickens compared the effect of 3 methionine + cystine levels (basal, and supplemented with 0.86 and 1.0% DL-methionine) at 2 different dietary protein levels (19.9 and 23.2%), each with 0 or 6% supplemented fat, on the dressing % and chemical composition of the edible portion of broiler carcasses at 7 wk of age. Data obtained (from 2 birds/replicate) showed that dressing % was unaffected by any of the treatments. Data on carcass composition indicated that addition of 6% fat at both protein levels increased the carcass fat % and decreased protein and moisture %. Methionine supplementation with each dietary protein or fat containing ration significantly increased carcass protein content and decreased fat %. AL

16

Factors affecting the stability of mechanically deboned poultry meat combined with structured soy protein in emulsions.
Janky, D. M.; Riley, P. K.; Brown, W. L.; Bacus, J. N.
Poultry Science 56 (3) 902-907 (1977) [16 ref. En] [Dep. of Poultry Sci., Florida Agric. Exp. Sta., Gainesville, Florida 32611, USA]

3 experiments were conducted to determine the effect of chopping time, chopping temp. and mixing time on the stability of emulsions made from 2 mechanically deboned chicken meat sources and subsequently combined with structured soy protein (SSP). Meat from unskinned chicken necks (UCN) contained 23% fat and 12% protein, while meat from skinned chicken necks (SCN) contained 11% fat and 16% protein. Emulsions made with meat from UCN and combined with SSP were significantly more stable if chopped for either the longest chopping time tested (9 min) or to temp. < 23.9° C. The stability of emulsions formed using meat from SCN and combined with SSP was not significantly affected by any of the chopping temp. tested but was numerically increased when chopped for only 3 min. Meat from UCN produced significantly more stable emulsions when SSP was not added; however, when SSP was added, significantly more stable emulsions resulted from either chopping to temp. < 23.9° C or mixing with the SSP for 6 or 9 min. The addition of SSP to emulsions made with meat from SCN had no significant effect, regardless of chopping temp. or mixing time. AS

17

Utility of Desi, White Leghorn, Rhode Island Red, and their 2- and 3-way crosses for meat purpose.
Jain, L. S.; Menawat, S. N.; Sharma, V. V.
Indian Journal of Animal Sciences 47 (4) 216-220 (1977) [18 ref. En] [Coll. of Agric., Univ. of Udaipur, Udaipur 313 001, India]

A study was conducted (at 12 wk of age) on the carcass quality of 40 males from each of the following groups: White Leghorn (W), Rhode Island Red (R), Desi (D), six 2-way crosses, and six 3-way crosses, with 0, 25, 50 and 100% Desi blood. Significant differences were observed between the 15 groups for dressed wt. and wt. of edible portion. Highest dressed wt. and wt. of edible portion was observed for R × (W × D); this was not significantly different from values for D × (W × R), and R. D × (R × W), W × (D × R), W × (R × D) and R × (D × W) were superior to purebred D and all 2-way crosses except W × R for dressed wt. and wt. of edible portion. SP

18

Pickled chicken gizzards. I. Acceptability and proximate analysis.
Arafa, A. S.
Poultry Science 56 (3) 1014-1017 (1977) [10 ref. En] [Dep. of Poultry Sci., Florida Agric. Exp. Sta., Gainesville, Florida 32611, USA]

Fresh chicken gizzards were cooked and pickled in 3 different pickling solutions (dilled, Kansas spicy and sweet and sour). Acceptability of pickled gizzards was determined after 90 days of refrigerated storage using a 7 point hedonic scale. Pickled pigs feet purchased from a retail store were used for comparison. Proximate analyses and shear force measurements were made on raw, cooked and pickled chicken gizzards and pickled pigs feet. The pH of the pickling solutions was determined at the beginning of the pickling process and at different time intervals during storage. Dilled and Kansas spicy pickled gizzards were found to be more acceptable than pickled pigs feet or sweet and sour gizzards. Initially, the raw chicken gizzards had a high shear force (59.51 kg/g), however, this value decreased after pickling and storage at 2 ± 1°C. The tenderizing effect of the pickling process is not fully understood. The pH of the various pickling solutions declined during the first month, then remained constant for the rest of the storage time. Analysis showed pickled gizzards to be low in fat and high in protein when compared with pickled pigs feet. The data obtained from this study indicate that pickled chicken gizzards are an acceptable and nutritious poultry product. AS

19

Butylated hydroxytoluene protects chickens exposed to Newcastle disease virus.
Brugh, M., Jr.
Science, USA 197 (4310) 1291-1292 (1977) [21 ref. En] [Southeast Poultry Res. Lab., ARS, Dep. of Agric., Athens, Georgia 30605, USA]

Dietary butylated hydroxytoluene (BHT), an antioxidant widely used in food and feed processing, has been shown to prevent mortality of chickens exposed to virulent Newcastle disease virus (NDV) and prevent serological response of

chickens exposed to avirulent NDV. The effect was evident when chickens were fed diets containing concn. of BHT normally used for antioxidant purposes (100-200 p.p.m. of total diet). It is considered significant that an antioxidant classified as 'generally recognized as safe' by the FDA is effective experimentally in the chemoprophylaxis of a viral disease although it is generally considered to lack in vivo toxicity when fed to animals in additive concn. up to 200 p.p.m. AL

20

Food hygiene in pre-packed foods.
Thiel, W.
Fleischwirtschaft 57 (9) 1539-1541; 1547-1548, 1550 (1977) [En, De] [Deutscher Ring 100, 4150 Krefeld, Federal Republic of Germany]

The hygienic state of prepacked foods, and contaminations during handling and processing, are discussed with special reference to Frankfurter-type sausages, deep-frozen chickens and milk. The manufacturing process was followed from the raw material to the packaged products, with bacteriological checks at various stages, and danger points were identified. In packaged Frankfurters (with or without vacuum) the initial bacterial count of 10^3-10^4/g rose to 10^8-10^9/g after 7 wk at 8°C. 24% of deep-frozen chickens were contaminated with Salmonellae and 50% with Enterobacteriaceae. Examination of >300 000 milk samples showed milk with an initial bacterial count of 10-40 × 10^6/ml was still very contaminated after pasteurization. Results confirmed that any interruption of the hygiene chain during processing had an adverse effect on the product. RM

21

Gas-liquid chromatographic determination of O-ethyl S-(4-chlorophenyl) ethanephosphonodithioate (Stauffer N-2596) and its metabolite in crops, soils, milk, and tissues of cattle and chickens.
Bussey, R. J.; Christenson, M. A.; O'Connor, M. S.
Journal of Agricultural and Food Chemistry 25 (5) 993-995 (1977) [3 ref. En] [Stauffer Chem. Co., Richmond, California 94804, USA]

A gas chromatograph equipped with a flame photometric detector in the phosphorus mode provided a highly sensitive method for determining residues of O-ethyl S-(4-chlorophenyl) ethanephosphonodithioate (Stauffer N-2596) and its metabolite O-ethyl S-(4-chlorophenyl) ethanephosphonothioate in crops (including various spp. of Brassica, corn and sugar beet), soils, milk, and tissues of beef and chickens. After extraction, crops and soils required no clean-up prior to chromatography; tissues, milk, cream and eggs required solvent partitioning. The detection limit was 0.01 p.p.m. for each compound. Recoveries from crops, soils, eggs, milk and most tissues were 76-110% for N-2596 and 75-105% for N-2596 metabolite. Recoveries of N-2596 metabolite from kidney, liver and cardiac muscle were 0-64%. AS

22

Detection of chicken flesh in beef sausages.
Hayden, A. R.
Journal of Food Science 42 (5) 1189-1192 (1977) [13 ref. En] [USDA Meat Sci. Res. Lab., Beltsville, Maryland 20705, USA]

Antisera to chicken troponin were produced in rabbits and were effective, in agar gel diffusion reactions, for the identification of chicken flesh in those beef sausages which by law should contain no chicken. Antisera to chicken troponin were reacted with extracts of heated beef sausages containing 1, 3 and 5% chicken flesh. The results indicate that such antisera can detect chicken flesh in beef sausages adulterated at the 1, 3 or 5% levels. Species specificity was demonstrated by a lack of reactivity between rabbit antiserum to chicken troponin and beef sausages and heated pork and lamb flesh. Chances of species cross-reactivity may increase with prolonged immunization. It is recommended that each antiserum be tested for species specificity before 'pooling'. IFT

23

Studies on body compartments. II. Chemical maturity and physiological age.
Shebaita, M. K.; Salem, M. A. I.; Badreldin, A. L.; Arram, G. A.
Archiv für Geflügelkunde 41 (4) 130-136 (1977) [28 ref. En, de, fr, ru] [Radiobiol. Dep., Atomic Energy Establishment, PO, Cairo, Egypt]

Male Fayoumi chicks (newly hatched to 36 wk of age) were used in a study on the relationship between age and body composition. Tables and graphs are given of proportions of fat, water, ash, lean dry body and 'residue' in the body, and ratios between these values, over the age range studied. These results are discussed in relation to the 'chemical maturity' concept of Moulton [Journal of Biological Chemistry (1923) 57, 79-97] and the 'physiological age' concept of Bailey et al. [Canadian Journal of Animal Science (1960) 40, 143-155]. [See FSTA (1977) 9 12S2225 for part I.] AJDW

24

[Effects of the distance and duration of transport on the meat quality of poultry.] Einfluss von Transportentfernung und -Dauer auf die Fleischbeschaffenheit von Schlachtgeflügel.
Ristic, M.; Schön, L.
Archiv für Geflügelkunde 41 (4) 149-151 (1977) [De, en, fr, ru] [Inst. für Fleischerzeugung, Oskar-von-Miller-Strasse 20, D-8650 Kulmbach, Federal Republic of Germany]

180 Lohmann broilers (slaughter wt. approx. 900 g) were used in a study on the effects of transport distance and duration (10-15 km, 15 min; 36 km, 35 min; or 90 km, 1.5 h) on meat quality. All broilers were held at the slaughterhouse for 30-45 min before slaughter. 2 carcass cooling methods (air and water) were used. Data are given for the pH,

colour brightness and juice retention capacity of the breast and thigh muscles, 15-50 min, 3 h or 24 h after slaughter. Variation attributable to transport, cooling method, time post-mortem and muscle studied is discussed in detail. AJDW

25

Performance and carcass grading characteristics of broiler chickens fed rapeseed gums.
Summers, J. D.; Leeson, S.
Canadian Journal of Animal Science 57 (3) 485-488 (1977) [6 ref. En] [Dep. of Anim. & Poultry Sci., Univ. of Guelph, Guelph, Ontario N1G 2W1, Canada]

Groups of male broilers were used in studies on effects of corn-based diets with and without rapeseed or soybean gums (a by-product of vegetable oil refining) on carcass quality. Diets tested contained: (i) 31% soybean meal (no added gums); (ii) 16.70% soybean meal + 20% Tower rapeseed meal (no added gums); (iii) 36.3% soybean meal + 1.5% rapeseed gum; (iv) 20% rapeseed meal + 1.5% rapeseed gum; and (v) 36.3% soybean meal + 1.5% soybean gum. Tables of data are given for body wt. gain and carcass quality (conformation, fleshing, breast finish, back finish, % breast cysts, % crooked breast keel, liver wt.). The results show that birds fed (i) had a significantly lower % breast cysts than those fed (ii), (iii), (iv) or (v). No other significant effects of diet on carcass quality were observed. AJDW

26

Action of crude papain on actin and myosin heavy chains isolated from chicken breast muscle.
Rattrie, N. W.; Regenstein, J. M
Journal of Food Science 42 (5) 1159-1163 (1977) [12 ref. En] [Poultry Sci., Rice Hall, Cornell Univ., Ithaca, New York 14853, USA]

The individual myofibrillar proteins, myosin and actin, were digested with crude papain (1:125 w/w for 0-3 min). The sodium dodecyl sulphate electrophoretic patterns and the rate of proteolytic hydrolysis were observed. Natural actomyosin and both contracted and uncontracted glycerinated myofibrils were also studied. The gel pattern of the actin proteolytic digestion suggested that 2 populations of actin exist. Although actin had the highest rate of hydrolysis in the pH state, the gels suggested only a very limited proteolysis. Actomyosin was less rapidly digested than myosin, and the proteins of the myofibrils, especially when contracted, were rapidly cleaved. IFT

27

Effect of brining and cooking procedure on tenderness of spent hens.
Oblinger, J. L.; Janky, D. M.; Koburger, J. A.
Journal of Food Science 42 (5) 1347-1348 (1977) [9 ref. En] [Food Sci. Dep., IFAS, Univ. of Florida, Gainesville, Florida 32611, USA]

3 experiments were conducted to determine the effects of brining and cooking procedures on the tenderness of spent hens. These experiments included tests on the effect of brining and cooking procedure on 84-wk-old hens; effect of brining on the tenderness of 39, 84 and 108-wk-old hens; and the effect of force moult or low salt diet as well as brining on the tenderness of meat from 108-wk-old hens. Shear values were significantly lower for both light and dark meat from brined hens. Light meat from both brined and unbrined birds was significantly more tender than dark meat. Cooking procedures did not appear to affect tenderness of light meat, but smoked dark meat was significantly more tender than oven-roasted dark meat. Feeding a low salt diet or force moulting did not significantly affect the tenderness of meat from 108-wk old hens. IFT

28

Determination of optimum brine curing procedures for smoked chicken.
Stubblefield, J. D.; Hale, K. K., Jr.; Ware, G. O.
Journal of Food Science 42 (5) 1349-1352 (1977) [16 ref. En] [Dep. of Poultry Sci., Agric. Exp. Sta., Univ. of Georgia, Athens, Georgia 30602, USA]

Optimization of curing procedures for smoked chicken was studied using surface response methodology. Preferred NaCl levels of 4-5% in the cooked meat were achieved with several combinations of cure time and brine NaCl concn. One excellent combination was 10.5% NaCl and 24 h cure. Although data on sucrose did not give the optimum level, sucrose in the brine should be ≤20-30% of the NaCl level. $NaNO_3$ was not necessary for the short cure times of this study where $NaNO_2$ and ascorbic acid were used in the curing brine. A short equilibration period of 6-12 h after curing before cooking appeared adequate to allow sufficient dispersion of brine ingredients in the meat. IFT

29

Control of Salmonella and extension of shelf-life of broiler carcasses with a glutaraldehyde product.
Thomson, J. E.; Cox, N. A.; Bailey, J. S.
Journal of Food Science 42 (5) 1353-1355 (1977) [11 ref. En] [USDA, Richard B. Russell Agric. Res. Cent., PO Box 5677, Athens, Georgia 30604, USA]

Broiler chicken carcasses were inoculated with Salmonella typhimurium (180-360 000 cells/carcass), then, in a simulated commercial chilling process, were prechilled at 18°C in water containing glutaraldehyde. On broilers that had been prechilled for 30 min in 0.5% glutaraldehyde (pH 8.6) then chilled in slush ice for 20 min, salmonellae were eliminated when the inoculum level/carcass was 250 cells, but not when the level was 360 000 cells. Transfer of salmonellae from inoculated to uninoculated carcasses (cross

contamination) was prevented by glutaraldehyde at ⩾0.01% in the prechill water, when the inoculum level was 200-300 cells/carcass. It was not prevented when the level was 360 000 cells/carcass. A 10-min prechill in 0.5% glutaraldehyde (pH 8.6) extended carcass shelf-life at 2°C about 6 days beyond that of controls. IFT

30

Effects of various levels of chlortetracycline and oxytetracycline on broiler performance and tissue residue.

Amin, M.; Kazemi, R.; Bondari, K.; Yazdani, C.

Archiv für Geflügelkunde 41 (5) 221-224 (1977) [9 ref. En, de, fr, ru] [Dep. of Anim. Sci., Coll. of Agric., Univ. of Tehran, Karaj, Iran]

1580 Anak-Royal broiler chickes (initial age 4 wk) were used in a 6-wk experiment conducted to evaluate effects of added aureomycin (A) or terramycin (T) in the drinking water on performance, and to determine A and T residues in the meat. The broilers were supplied with water containing A or T at concn. of 0, 0.017, 0.035, 0.070 or 0.105 g/l. A table of data is given showing A and T concn. in the meat and blood. Meat samples from all broilers receiving antibiotics in the drinking water contained approx. 0.30 µg antibiotic/g, irrespective of antibiotic type or dose. No A or T was detected in meat from broilers receiving no A or T in the drinking water. Withdrawal of A and T from the drinking water for 2 wk resulted in complete elimination of A and T from the muscle tissue. AJDW

31

Guar-meal (Cyamopsis tetragonoloba L.) inclusion in broiler rations. Effect on carcass yield and meat composition.

Thakur, R. S.; Pradhan, K.

Indian Journal of Animal Sciences 45 (11) 880-884 (1975) [21 ref. En] [Haryana Agric. Univ., Hissar 125 004, India]

Diets containing 3 levels of guar meal (0, 7.5 and 15.0%), 2 levels of metabolizable energy (ME) (2450 and 2900 kcal/kg feed) and 2 levels of protein (20 and 30%) were fed to White Cornish chicks. At the end of the experiment, 5 chicks from each group were slaughtered. Results show that the effect of guar meal on dressing % was not statistically significant; however, ready-to-cook meat wt. was reduced by guar meal in the diet, values ranged from 699 g for control to 375 g for chicks fed 15% guar meal. Increase in protein in the diet increased carcass protein content but decreased ether extract. Increased energy level improved fat deposition in carcasses, but fat deposition was less in chicks fed 7.5 and 15% guar meal than for controls. Results are presented in table form. SP

32

A model system for studying chicken lactate dehydrogenase-5 in the particulate phase.

Hirway, S. C.; Hultin, H. O.

Journal of Food Science 42 (5) 1164-1167, 1192 (1977) [31 ref. En] [Dep. of Food Sci. & Nutr., Univ. of Massachusetts, Amherst, Massachusetts 01002, USA]

The effect of the interaction of chicken lactate dehydrogenase isoenzyme 5 (LDH 5) with carboxymethyl cellulose (CMC) on some kinetic properties was studied. The effect of pH, NADH and glyceraldehyde-3-phosphate dehydrogenase on binding of chicken LDH-5 to CMC was determined and found to be qualitatively similar to that observed earlier for the interaction of LDH with the particulate fraction of muscle [see FSTA (1972) 4 7S900] but showed quantitative differences. Modifications of the catalytic properties of LDH on binding to CMC and muscle particles may be due to interactions between the enzyme and the insoluble support or to a change in the microenvironment of the enzyme. IFT

33

Pro- and antioxidants in the diets of broilers and their effects on carcass quality: copper, selenium and acidulated soybean-oil soapstock.

Bartov, I.

Poultry Science 56 (3) 829-835 (1977) [28 ref. En] [Div. of Poultry Sci., Agric. Res. Organization, Volcani Cent., Bet Dagan, Israel]

Effects were studied of combinations of various concn. of dietary Cu or Se, acidulated soybean-oil soapstock (ASS), and calorie-to-protein (C:P) ratio on carcass quality of broilers. Supplemental Cu or Se did not have any marked effect on fat accumulation, degree of saturation of this fat, or stability of carcass fat and meat to oxidation. Widening the dietary C:P ratio, with or without ASS supplementation, increased fat deposition, the degree of saturation of carcass fat and its stability as well as that of the meat. Supplemental ASS significantly increased the degree of unsaturation of carcass fat and decreased its stability in the presence of dietary antioxidants, but increased fat stability in their absence. In both instances meat stability increased significantly if judged by initial TBA values, or decreased significantly if estimated on the basis of change in TBA values during incubation. AS

34

Eating quality and composition of spent hens processed with or without immersion chilling.

Zenoble, O. C.; Bowers, J. A.; Cunningham, F. E.

Poultry Science 56 (3) 843-845 (1977) [12 ref. En] [Dep. of Food & Nutr., Kansas State Agric. Exp. Sta., Manhattan, Kansas 66506, USA]

18 White Leghorn spent hens, obtained from a local producer, were processed according to commercial practices. 9 were cooked (2.5 h in boiling water) immediately (without chilling) and the remaining 9 were cooked after overnight chilling in ice slush. Cooked hens were hand-deboned and mechanically chopped. Yields,

composition, and thiamin were determined; and an experienced taste panel scored tenderness, juiciness, and flavour. Bone-in cooked yield (71.5 and 72.8%) and edible yield (42.8 and 43.2%) were similar for the 2 treatments. % of protein, fat, and moisture of the chopped meat did not differ significantly for the 2 treatments. % of ash and thiamin were greater for meat from hens cooked without chilling. Meat from the birds cooked without chilling was less tender but juicier than meat from birds chilled overnight. Scores for chicken flavour did not differ significantly. AS

35

Automated phosphate injection of whole broiler carcasses.

Hale, K. K., Jr.

Poultry Science 56 (3) 859-864 (1977) [27 ref. En] [Dep. of Poultry Sci., Univ. of Georgia, Athens, Georgia 30602, USA]

Automated injection of phosphate solution into broiler carcasses at levels near the USDA permitted level of 3% decreased wt. loss during storage, improved cooking yields and lowered shear values of breast meat. Carcasses were selected at a broiler processing plant and subjected to a 3 × 3 factorial arrangement of treatments that included 3 chilling treatments (dry chilled, chilled in 3°C water, and chilled in 3°C water after prechilling in 10°C water) and 3 injection treatments (control, water and 12% polyphosphate solution). Wt. loss of carcasses was highest during the first 24 h of 3°C storage and similar for all chilling and injection treatments. However, over the entire 7-day storage period the phosphate-injection treatments seemed to retard the wt. loss of water-chilled treatments. Net gains through chilling, injection and 3°C storage were about 20 g for most non-injected or water-injected carcasses, but were ≥40 g for phosphate-injected water-chilled birds. Average cooked yields were higher for phosphate-injection treatments (84.4%) than for control (82.9%) or water-injection (82.2%). Average shear values (kg/g of sample) of breast meat were lower for phosphate-treated carcasses (4.6) than for control (6.6) or water-injected (6.5). AS

36

Influence of energy system and level of various fat sources on performance and carcass composition of broilers.

Griffiths, L.; Leeson, S.; Summers, J. D.

Poultry Science 56 (3) 1018-1026 (1977) [20 ref. En] [Dep. of Anim. & Poultry Sci., Univ. of Guelph, Guelph, Ontario N1G 2W1, Canada]

Day-old broiler chicks were fed isocaloric diets containing 0, 3, 6, or 9% fat (an animal/vegetable fat blend) calculated on a metabolizable or net energy basis. The level of fat in the diet had no effect on carcass or visceral moisture, fat or protein contents at 8 wk, and the only significant effect of method of calculation of energy content was on carcass protein content, which was higher for the net energy method. JRR

37

Torula yeast developed in final molasses and dried for broiler fattening. III. Effect of fish meal and vegetable oil supplementation.

Valdivie, M.; Aragon, E.; Gutierrez, R.; Elias, A.

Cuban Journal of Agricultural Science 11 (2) 191-199 (1977) [8 ref. En] [Instituto de Ciencia Animal, Apartado 24, San Jose de las Lajas, Havana, Cuba]

1200 one-day-old Barred Plymouth Rock chickens were fed diets containing 15, 25 or 30% Torula yeast, 0, 2.5 or 5% vegetable oil and 3 or 6% fish meal. A control group without Torula yeast was used. Chickens fed diets of 15% yeast + 5% vegetable oil + 6% fish meal, 25% yeast + 2.5% vegetable oil + 6% fish meal or the control diet had high yields of 71.8, 70.2 and 70.0% and low carcass bone content of 22.1, 21.0 and 23.7%, resp., compared with chickens fed 30% yeast + 3% fish meal, 30% yeast + 2.5% vegetable oil + 3% fish meal or 30% yeast + 5% vegetable oil + 6% fish meal, which had low yield values of 66.9, 65.7 and 66.4% and high bone contents of 29.3, 25.2 and 25.7%, resp. It was concluded that a max. limit of 15% Torula yeast should be added to diets during the first 6 wk of age [See Cuban Journal of Agricultural Science (1977) 11 (2) 181-189 for part II] SP

38

Substitution of fish meal and/or soybean meal by a mixture of Torula yeast and sunflower seed meal in broiler rations.

Valdivie, M.; Aragon, E.; Jordan, H.

Cuban Journal of Agricultural Science 11 (2) 201-207 (1977) [20 ref. En] [Instituto de Ciencia Animal, Apartado 24, San Jose de las Lajas, Havana, Cuba]

180 one-day-old Barred Plymouth Rock chickens were fed (i) control diet with soybean meal + fish meal as protein sources, (ii) soybean meal totally replaced by a 1:1 mixture of Torula yeast and sunflower seed meal and (iii) soybean and fish meal replaced by Torula yeast and sunflower seed meal, 1:1 ratio. Carcass yield % was 62.5, 60.6 and 60.7 and carcass bone % 18.03, 16.42 and 17.86 for treatments (i), (ii) and (iii) resp. It is concluded that fish meal and/or soybean meal should not be totally replaced by Torula yeast-sunflower seed meal. SP

39

[Quantitative and qualitative properties of broilers and broiler meat.] Quantitative und qualitative Eigenschaften von Hähnchen und Hähnchenfleisch.

Ristic, M.

Fleischwirtschaft 57 (10) 1870-1872, 1875; 1806; 1809-1810 (1977) [4 ref. De, en, fr] [Bundesanstalt für Fleischforschung, 8650 Kulmbach, Federal Republic of Germany]

160 grade A broiler carcasses were analysed for quantitative tissue composition of the main cuts, chemical composition of meat and the effect of storage time, cooling medium and scalding temp on core temp., pH, colour, juice-holding capacity and sensory evaluation of chilled fresh broilers. Tabulated results revealed that breast and thigh had the highest % of meat (>60%) with meat:bone ratios of 1:0.26 and 1:0.37, resp., and meat:fat ratios of 1:0.05 and 1:0.03, resp. The mean % protein was 23.3 and 19.6, resp.; % water was 74.6 and 73.7 resp. Scalding temp. of 48-50°C resulted in lower initial pH (15-50 min post mortem) and better sensory evaluation than 56-58°C; water cooling resulted in lower colour brightness (Göfo values) than air cooling. At constant temp. of +1°C and adequate slaughtering and evisceration hygiene, fresh broilers could be stored for <3 days for excellent quality, <6 days for good quality and <12 days for acceptable quality. The slight increase in total bacterial count (from log 4.82 to 5.47 after 6 days and 6.35 after 9 days) did not detract significantly from the broiler quality, provided the broilers were well dried. RM

40

[Methods for determining extraneous water content of broilers.] Vergleich der Methoden zur Bestimmung des Fremdwassergehaltes in Hähnchen.
Woltersdorf, W.
Fleischwirtschaft 57 (10) 1876-1877; 1806; 1810 (1977) [2 ref. De, en] [Bundesanstalt für Fleischforschung, 8650 Kulmbach, Federal Republic of Germany]

25 broiler and pullet carcasses were analysed for extraneous water contents according to EEC Council Regulation 2967/76 (23rd Nov. 1976) Annex II, III and IV, describing 2 chemical and 1 quick method (drip method). Tabulated results showed that the 3 methods gave very different results, e.g. detn. according to Annex III (wet chilled) gave 9-16% lower contents than Annex IV (without edible offal). The legal uncertainty due to these differences militates against effective control. Differences are attributed to the methods of calculation. To improve the regulations, a single chemical method or changed methods of calculation for the 2 methods (leading to the same results) and a single tolerance value are proposed. The edible offal should not be included. The method described in Annex IV without edible offal avoids these difficulties. A tolerance of 6% extraneous water is acceptable to both producers and consumers. RM

41

[Effect of feeding fermented dehydrated poultry waste on body weight gain, feed efficiency and meat quality of broiler chick.]
Kim, C.; Rhee, Y.
Korean Journal of Animal Science 19 (3) 194-200 (1977) [19 ref. Ko, en]

200 broiler chicks were fed diets containing (i) 10, (ii) 15, (iii) 20 or (iv) 25% fermented dehydrated poultry waste (FDPW) or (v) 10 or (vi) 20% dehydrated poultry waste (DPW) for 6 wk. Chemical analyses of chicken meat reveal, for control, (i), (ii), (iii), (iv), (v) and (vi), resp.: moisture content 75.28, 75.14, 75.24, 75.45, 75.83, 75.98 and 75.50%, crude fat 1.45, 2.11, 1.84, 1.89, 2.12, 2.73, 1.77%, and crude protein 21.7, 20.14, 20.65, 21.10, 21.98, 20.73 and 20.69%. Sensory evaluation showed no difference among treatments in the flavour of poultry meat. [From En summ.] SP

42

Curing procedures for smoked chicken.
Stubblefield, J. D.; Hale, K. K., Jr.
Poultry Science 56 (4) 1135-1139 (1977) [16 ref. En] [Dep. of Poultry Sci., Univ. of Georgia, Athens, Georgia 30602, USA]

Subjective analysis of smoked chickens indicated that inclusion of $NaNO_3$ in the cure solution for 18-24 h cure times produced no increase in colour and decreased cured flavour and saltiness scores. Smoked chickens cured for 24 h have higher cured flavour scores, cured yields and cooked yields than those cured for 18 h. In one experiment, cooked yields of 69% were attained for endpoint meat temp. of 80°C, while in another experiment cooked yields of 81% were reached with endpoint meat temp. of 77°C. Equilibration for 24 h produced higher salt content (3.2%) in cooked meat when compared to 4 h equilibration (2.7%). Initiation of curing by immersion of carcasses into brine in frozen state gave cooked meat salt levels of 2.7% while carcasses cured from fresh or thawed states had salt levels of 3.3%. AS

43

The effect of sex, dietary energy, meat protein, ascorbic acid and iron on broiler skin collagen.
Smith, T. W., Jr.; Couch, J. R.; Garrett, R. L.; Creger, C. R.
Poultry Science 56 (4) 1216-1220 (1977) [15 ref. En] [Dep. of Poultry Sci., Texas Agric. Exp. Sta., Texas A&M Univ., College Sta., Texas 77843, USA]

2 feeding studies were performed to determine the effect of sex and dietary factors on collagen metabolism in broilers. In experiment 1, day-old chicks were fed diets containing 3190 or 3410 kcal metabolizable energy/kg, 0 or 15% meat and bone meal and 0 or 1 g ascorbic acid/kg. Experiment 2 used diets with the same energy levels and 60 or 260 p.p.m. Fe. None of the dietary factors had any effect on the total or insoluble collagen contents, or on the degree of crosslinking at 56 days of age. Male birds had higher levels of both total and salt-insoluble collagen than did the females. JRR

44

Preparation of ready-to-cook chicken.
Ischhiramani, R. S.
Poultry Guide 14 (9) 37-41 (1977) [En] [Poultry Res. Div., IVRI, Izatnagar, Uttar Pradesh, India]

Pre-slaughter handling of birds, inspection before slaughter, the slaughter process, dressing and inspection of various internal organs for diseases, transport, and marketing aspects are discussed. CFTRI

45

[Research into the meat yield of chickens. I. The effect of breed combinations on fattening capacity and carcass quality.]
Kociova, E.; Chudy, J.; Misikova, E.; Zatko, T.; Horvathova, V.
Hydinarstvo No. 13, 135-150 (1973) [21 ref. Sk, en, ru] [Vyskumny Ustav Chovu a Slachtenia hydiny, Ivanka pri Dunaji, Czechoslovakia]

The meat yield of 56-days-old broiler chickens of the following commercial hybrids was studied: Ross I (England), Hubbard (Belgium), G 65 (Hungary), Ch 136 (Czechoslovakia), Ross I (parent material imported to Czechoslovakia) and Cornish White × White Plymouth Rock (Czechoslovakia). The trials included 400 chickens of each cross. At the end of fattening, 12 birds were selected as an average sample from each group. It was established that Ross I chickens from England gave the best carcass quality, followed by Ross I bred in Czechoslovakia, Hubbard, G 65, Ch 136 and Cornish White × White Plymouth Rock. [See also following abstr.] STI

46

[Research into the meat yield of chickens. II. Study of the qualitative properties and nutritive value of the meat.]
Chudy, J.; Kociova, E.; Horvathova, V.; Misikova, E.; Zatko, T.
Hydinarstvo No. 13, 151-163 (1973) [12 ref. Sk] [Vysoka Skola Pol'nohospodarska, Nitra, Czechoslovakia]

It was established that the individual breed combinations listed in the preceding abstr. possessed different capabilities to produce meat of high quality. Broilers of domestic production as well as imported broilers were studied with respect to slaughter yield, quality of meat, (sensory and nutritive properties), and the costs of meat production. The final evaluation showed that Ross I from England gave the best results, followed by G 65 from Hungary, Ross I bred in Czechoslovakia, Ch 136 (Czechoslovakia) and Cornish White × White Plymouth Rock bred in Czechoslovakia. STI

47

Polybrominated biphenyl levels in raw and cooked chicken and chicken broth.
Smith, S. K.; Zabik, M. E.; Dawson, L. E.
Poultry Science 56 (4) 1289-1296 (1977) [28 ref. En] [Dep. of Food Sci. & Human Nutr., Michigan State Univ., E. Lansing, Michigan 48824, USA]

White Leghorn hens were fed (i) 0, 30 or 45 or (ii) 60 or 90 p.p.m. polybrominated biphenyls (PBB, 75% Br by wt.) for 5 wk. Group (i) were sacrificed at 5 wk., group (ii) were maintained on a 'clean' ration for a further 8 wk. Thigh meat, thigh skin, drumstick and breast (with skin) from one half of each bird were analysed raw; pieces from the other half were pressure cooked separately in 500 ml deionized water at 15 lb/in^2 for 15 min; cooked meat and broth were analysed separately. PBB levels are quoted on p.p.m. wet wt., p.p.m. solids and p.p.m. fat bases. The level of PBB in all tissues increased with level in the diet, with group (ii) having higher PBB loads than group (i). PBB content varied greatly between birds, but PBB contents on a fat basis, and % PBB recovered in cooked meat (65.5-72.9%), did not differ significantly between pieces. Cooking had no effect on the PBB content on a solids basis, but PBB (fat basis) level in broth (52.6 p.p.m.) was significantly less than that in raw (86.1 p.p.m.) or cooked (96.2 p.p.m.) meat, indicating that PBB removal by rendering is not proportional to the amount of fat removed. JRR

48

Chicken frying.
Kaufman, H. R.
United States Patent 4 054 673 (1977) [En]

Chicken pieces coated with a whipped batter mixture are heated in an oil bath to 330°F. The exterior surfaces are cooled suddenly to form a crisp and flaky surface. IFT

49

Mustard cake a substitute for groundnut cake in egg-type and meat-type chick diets.
Cilly, V. K.; Lodhi, G. N.; Ichhponani, J. S.
Journal of Agricultural Science, UK 89 (3) 759-765 (1977) [20 ref. En] [Dep. of Anim. Sci., Punjab Agric. Univ., Ludhiana, India]

8 samples of expeller-processed mustard cake (MS) from different processing plants, with average contents of 37.2% crude protein and 2.09% tannins, were used to assess the nutritive value of MS for egg-type and meat-type chicks; average metabolizable energy contents of MS for the 2 chick types were 2350 and 2300 kcal/kg, resp. MS was used to replace 50 or 100% of the 30-32% groundnut cake in the control diet. MS was found not to affect the body composition (DM, crude protein, ether extract) of 4- and 6-wk old chicks. AL

50

[Alpha-tocopherol content and its relationship with other tissue components in meat.]
Yamauchi, K.; Chinen, K.; Ohashi, T.
Japanese Journal of Zootechnical Science [Nihon Chikusan Gakkai-ho] 48 (9) 458-462 (1977) [14 ref. Ja, en] [Fac. of Agric., Miyazaki Univ., Miyazaki-shi 880, Japan]

Fowl, swine, sheep, cattle and horse muscles were studied to determine the difference in α-tocopherol content between white and red muscle. Results show α-tocopherol contents of white and red muscle of fowl, swine, sheep, cattle and horse

average, resp. (μg/100 g wet tissue): 707.1 and 218.7; 98.4 and 139.8; 256.0 and 410.3; 346.6 and 629.6; and 584.4 and 710.4. In most species, α-tocopherol level was found to be higher in red muscle than in white muscle, and tended to increase with increasing concn. of myoglobin and phospholipids. A significant positive correlation was found between myoglobin concn. and α-tocopherol level for mutton, beef and horse meat; the α-tocopherol content was positively correlated to the amount of phospholipids in chicken and beef. [From En summ.] SP

51

Effects of pH on the flavor colatiles of poultry meat during cooking.

Rao, C. S.; Day, E. J.; Chen, T. C.

Poultry Science 56 (3) 1034-1035 (1977) [7 ref. En] [MAFES, Poultry Sci. Dep., Mississippi State Univ., Mississippi 39762, USA]

The breast and thigh meats of broiler carcasses were hand deboned, blended and cooked at natural pH and at pH values of 2.4, 4.0, 7.0, 9.0 and 10.0. The S-containing volatiles and the carbonyl volatiles produced upon cooking were collected as their Pb derivatives and their 2,4-dinitrophenylhydrazones accordingly. Cooking broiler meat at neutral pH was the least effective in the production of S-containing volatiles as compared to other tested samples. However, cooking at neutral pH yielded the greatest amounts of carbonyls. Increasing pH values of poultry meat beyond 7.0 before cooking increased the yield of S-containing volatiles greatly and decreased the carbonyls. This effect was less pronounced in the acid region than in the alkaline region. AS

52

[Antibiotics residues in meat and organs of broilers.] Rückstände von Antibiotika in Muskulatur und Organen von Schlachtgeflügel.

Mulder, R. W. A. W.; Hulst-van Arkel, M. C. van der

Archiv für Lebensmittelhygiene 28 (1) 17-20 (1977) [6 ref. De, en] [Inst. for Poultry Res. 'Het Spelderholt', Beekbergen, Netherlands]

2 groups of 60 broilers were fed for 44 days a basal diet without antibiotics or with 20 p.p.m. each of bacitracin, flavomycin, spiramycin and virginiamycin. After slaughter, each carcass was analysed for antibiotics residues in the liver, kidney and breast muscle, using Bacillus cereus Kiel, B. subtilis 165, B. subtilis BGA and Micrococcus luteus ATCC 9341. All the samples from both groups were negative, showing no antibiotics residues. RM

53

[Fluctuations in the total skeletal muscle weight during the period of sexual maturity in chickens.]

Iwamoto, H.; Ono, Y.; Takahara, H.; Okamoto, M.

Japanese Journal of Zootechnical Science [Nihon Chikusan Gakkai-ho] 48 (10) 522-527 (1977) [14 ref. Ja, en] [Fac. of Agric., Kyushu Univ., Fukuoka-shi 812, Japan]

Males of White Cornish (WC) and New Hampshire (NH), and males and females of Rhode Island Red (RIR), Barred Plymouth Rock (BPR) and White Leghorn (WL) chickens were compared for differences of measured and estimated total muscle wt. Results show that differences between the measured and estimated wt. increased from 18 to 31 g in 19 to 32 wk old RIR males, while there was a rapid decrease between 21 and 25 g in 25 to 26 wk old RIR females. Differences in estimated wt. of WC, RIR and BPR males were similar but differed from that of wl male, the % difference of which was the smallest among these breeds. % differences in females were similar among the breeds, and were significantly smaller than those of the RIR, BPR and WL males. It was concluded that growth of testes (androgen secretion) has an effect on growth of skeletal muscle in males. [From En summ.] SP

54

Improved gas-liquid chromatography method for determining nitrofuran drug residues in animal tissues.

Ritchie, A. R.; Clear, M. H.; Solly, S. R. B.

New Zealand Journal of Science 20 (2) 225-229 (1977) [7 ref. En] [Wallaceville Anim. Res. Cent., Res. Div., Min. of Agric. & Fisheries, Private Bag, Upper Hutt, New Zealand]

A method is described for measuring nitrofuran drug residues to levels of 10 μg/kg in animal tissues. The drugs are extracted from kidney or liver tissue with dilute metaphosphoric acid and from fat, muscle, or skin with N,N-dimethylformamide. Extracts are converted to the phenylhydrazone of 5-nitro-2-furaldehyde (5N2F) and partitioned into toluene. Clean-up of the toluene extracts is by chromatography on alumina columns followed by hydrolysis of the phenylhydrazone to 5N2F. The hydrolysis product is partitioned into ethyl acetate and measured by GLC with electron capture detection. Recoveries from chicken tissues spiked with 0.5 mg/kg furaltadone, furazolidone, nihydrazone, or nitrofurazone varied with the drug and tissue, and ranged from 49% with furazolidone from kidney to 100% with nihydrazone from fat. AS

55

Effects of dietary fibers on liver lipid accumulation in chicks.

Akiba, Y.; Matsumoto, T.

Japanese Journal of Zootechnical Science [Nihon Chikusan Gakkai-ho] 48 (10) 554-562 (1977) [46 ref. En, ja] [Fac. of Agric., Tohoku Univ., Sendai-shi 980, Japan]

Growing chicks, 14 days old, were fed a fibre-free basal diet or a basal diet containing 0.5% fibre, each supplemented with 4% cellulose, pectin, or konjac mannan, for 19, 32 or 54 days. Liver wt.

was reduced by feeding fibre supplemented diets; mannan reduced abdominal fat wt. significantly. In chicks fed no dietary fibre, phospholipid comprised the major portion and triglyceride ⅓ of liver lipid. Triglyceride was decreased and phospholipid significantly increased in chicks fed cellulose, pectin or mannan. Results are given in tables. SP

56

Microwaves for the meat industry.
Nott, B.
Food Processing Industry 46 (548) 18, 20 (1977) [En] [ABR Food Machinery Ltd., Denbigh Rd., Bletchley, Milton Keynes, Bucks., UK]

Timportant developments pioneered by ABR Food Machinery Ltd. are discussed. 2 are dealt with in detail, namely, tempering of blocks of meat and other products, and secondly, a new microwave cooker. The third microwave development, an oil/microwave chicken cooker, is briefly mentioned. VJG

57

Comparison of the localization of several muscle proteins in relaxed and contracted myofibrils.
Heizmann, C. W.; Bläuenstein, I. E.; Eppenberger, H. M.
Experientia 34 (1) 38-40 (1978) [9 ref. En] [Inst. of Cell Biol., Swiss Fed. Inst. of Tech., CH-8093 Zürich-Hönggerberg, Switzerland]

The localization of several muscle proteins was studied, in myofibrils prepared from chicken muscle, by an immunofluorescence technique. During the study it was found that 90% of the fibrils from leg or breast muscles were in the relaxed state when prepared from freshly-excized muscles, whereas 80% of the fibrils prepared from heart muscle were in the contracted state. Prolonged storage of excized leg or breast muscle in ice resulted in a high % of contracted myofibrils. DIH

58

[Selecting the optimal heat processing method for the processing of meat and meat products.]
Bol'shakov, A.; Karpeev, I.; Mitrofanov, N.; Khlebnikov, N.
Myasnaya Industriya SSSR No. 10, 34-37 (1976) [7 ref. Ru] [Moskovskii Tekh. Inst. Myasnoi i Molochnoi Promyshlennosti, Moscow, USSR]

The following characteristics were determined, to establish the changes occurring in the total content of SH groups in chicken meat: amperometric titration; SH groups reacting with parachlormercurybenzoate; collagen degradation during boiling; and protein extraction from the cooked meat followed by the detn. of hydroxyproline in the extracted meat using the reaction with dimethylamino-benzaldehyde. Slow heating in test tubes on a water bath was compared with fast heating in a high frequency field. It was established that the content of SH groups reacting with parachlormercurybenzoate and with $AgNO_3$ was approx. equal, regardless of the heat processing method. The hydroxyproline content was considerably lower in meat heated in water. Several equations are given showing the dependence of changes taking place in the meat on heat processing method. The changes of muscle proteins are more dependent on the temp. used on the duration of heating, while the degradation of collagenous material depends on the heating time and conditions. STI

59

Specific detection of polyphosphates in frozen chicken by combination of enzyme blocking and ^{31}P F.T.n.m.r. spectroscopy.
O'Neill, L. K.; Richards, C. P.
Chemistry and Industry No. 2, 65-67 (1978) [18 ref. En] [Lab. of the Gov. Chem., Cornwall House, Stamford Street, London SE- 9NQ, UK]

Samples from retail chicken declared as having been treated with tripolyphosphate were macerated with disodium EDTA while still frozen, allowed to thaw in the NMR sample tube, then ^{31}P Fourier transform NMR was performed immediately, and signals from tripolyphosphate and pyrophosphate were readily identified. Presence of polyphosphates was also detected in other frozen foods, e.g. fish fingers and beefburgers. The method enables the rapid, direct and specific identification of polyphosphates in food with min. sample preparation. It is thought that many economically important areas of meat production that affect toughness and quality, including slaughter and carcass storage methods and processing conditions, may be amenable to FT NMR spectroscopy. AL

60

Suitability of different bacterial groups for determining faecal contamination during post scalding stages in the processing of broiler chickens.
Notermans, S.; Leusden, F. M. van; Schothorst, M. van
Journal of Applied Bacteriology 43 (3) 383-389 (1977) [16 ref. En] [Lab. for Zoonoses & Food Microbiol., Nat. Inst. of Public Health, Bilthoven, Netherlands]

Detn. of total count, Enterobacteriaceae, Escherichia coli and psychrophiles were performed on macerated skin samples obtained from broiler chickens before and after scalding, and at various processing stages. High initial counts meant that, with scalding at $<60°C$ none of the bacterial groups were suitable for detecting faecal contamination; counts after scalding were related to counts before scalding. With scalding at $>60°C$, Enterobacteriaceae and E. coli counts were greatly reduced; because of simplicity and low s.d., Enterobacteriaceae counts are recommended as an index of subsequent faecal contamination after scalding at $>60°C$. Psychrophiles were undetectable after scalding at all temp. studied (53-61°C), but are not faecal bacteria; psychrophile counts reflect the bacteriological quality of the cleaning and cooling water. DIH

61

New concepts in treatment of poultry processing wastes.
Woodard, F. E.; Hall, M. W.; Sproul, O. J.; Ghosh, M. M.
Water Research 11 (10) 873-877 (1977) [En] [Water Resources Cent., Univ. of Nebraska, Lincoln, Nebraska 68503, USA]

A wastewater treatment plant is described which was designed for a poultry plant which processes 90 000-120 000 broilers/day. Wastewater is screened, alum and soda ash are added, then an anionic polymer is added at the suction side of the feed pump to an air flotation unit. The combined chemical coagulation/air flotation process gives float material which is removed to form a sludge (which can be sold for rendering to animal feed), leaving clarified water which, after chlorination, is suitable for use in the plant where potable water is not required. Waste water which had a BOD of 400-1500 mg/l. produced effluent from the treatment system of BOD < 100 mg/l.; this was independent of influent BOD concn. and showed the importance of reducing total wastewater to reduce total BOD discharged/day. DIH

62

Tissue residue and comparative metabolism studies on tiazuril in the chicken, rat, dog, and monkey.
Lynch, M. J.; Figdor, S. K.
Journal of Agricultural and Food Chemistry 25 (6) 1344-1353 (1977) [13 ref. En] [Cent. Res. Div., Pfizer Inc., Groton, Connecticut 06340, USA]

During comparative metabolism studies, chickens were fed tiazuril (T) in feed at a commercial rate (0.0015%) for 56 days. The chief metabolite in tissues was a compound oxidized at the S atom and designated T-SO_2. Levels (p.p.m.) of T and T-SO_2, resp., in tissues after 56 days' feeding were: muscle, 0.09 and 0.18; liver 0.34 and 1.15; kidney, 0.27 and 0.83; and fat, 0.18 and 0.2. Levels of T in all tissues after 2 days' withdrawal were < 0.01 p.p.m., and levels of T-SO_2 in all tissues after 4 days' withdrawal were < 0.03 p.p.m. DIH

63

[Hygiene during scalding of broilers.] Hygiene beim Brühen von Schlachtgeflügel.
Mulder, R. W. A. W.; Dorresteijn, L. W. J.
Fleischwirtschaft 57 (12) 2220-2222; 2169; 2172 . (1977) [9 ref. De, en, fr] [Inst. für Geflügelforschung 'Het Spelderholt', 7361 DA Beekbergen, Netherlands]

The microbial contamination of broilers supplied to poultry processing plants was studied by determining the number of organisms that can be washed off from each broiler. The influence of scalding was studied by microbial counts of organisms that can be washed off before and after scalding. Tabulated results showed that counts were reduced by 2.5-3.0 log with scalding water at 60° C. Analysis of the scalding water in 6 processing plants with water temp. 52-60.5° C showed all water samples positive for Clostridium perfringens; water was positive for salmonellae only at water temp. < 56° C. The number of microorganisms on the carcasses can be considerably reduced by spraying with clean water immediately after scalding. Cross-contamination can be reduced by countercurrent scalding, separating the entry and exit of the carcasses from the scalding vessel and subdividing the scalding system. RM

64

Effects of variation in dietary energy concentration of starter and finisher diets on broiler production.
Farrell, D. J.; Hardaker, J. B.; Battese, G. E.; Cumming, R. B.
Australian Journal of Experimental Agriculture and Animal Husbandry 17 (88) 755-760 (1977) [6 ref. En] [Dep. of Biochem. & Nutr., Univ. of New England, Armidale, NSW, Australia]

Thirty-two batches of 104 one-day-old chicks of a commercial broiler strain were used in a study on effects of various combinations of starter and finisher diets (differing in energy concn.) on performance and carcass quality. The diets used had calculated energy concn. of 10.89, 11.72, 12.56, 13.40 and 14.20 MJ/kg. The birds were slaughtered at approx. 1650 g live wt. Dressing % ranged from 59.76% (starter diet containing 12.56 MJ/kg, finisher diet containing 10.89 MJ/kg) to 64.39% (starter diet containing 12.56 MJ/kg, finisher diet containing 13.40 MJ/kg). AJDW

65

[Maize pollen as a growth stimulator and protein supplement in poultry feed. I. Effects on growth of broilers.]
Salajan, G.
Zeitschrift für Tierphysiologie, Tierernährung und Futtermittelkunde 39 (5/6) 237-241 (1977) [10 ref. Fr, en, de] [Fac. de Zootehnie, Strada Manastur 3, Cluj-Napoca, Romania]

A total of 180 White Plymouth Rock broilers was used in a study over the age range 1-70 days, to evaluate effects of supplementation of the diet with 0, 1, 2, 3, 4 or 5% maize pollen on performance and carcass quality. Tables of results are given. The results show that supplementation of the diet with maize pollen tended to increase dressing %, % total meat, % high-quality meat, the degree of pigmentation of the skin and the DM content of the meat, and to decrease the % bone in the carcass. These trends were, however, not statistically significant. [See Zeitschrift für Tierphysiologie, Tierernährung und Futtermittelkunde (1977) 39 (5/6) 242-246 for part II.] AJDW

66

[Effects of N fertilization of wheat on its value as a component of broiler diets.]
Rys, R.; Koreleski, J.; Krasnodebska, I.; Kuchta, M.; Zegarek, Z.
Roczniki Naukowe Zootechniki 4 (2) 183-195 (1977) [17 ref. Pl, en, ru] [Inst. Zootech., ul.

Sarego 2, 31-047 Krakow, Poland]

This paper includes data showing effects of various levels of N fertilization of 'Grana' and 'Mamut' var. wheats on the carcass quality of broilers fed diets containing 50% wheat. The results show that N fertilization level did not significantly affect dressing % or the % internal body fat. With both wheat var., breast meat % in the carcass decreased with increasing level of N fertilization. Thigh meat % increased with increasing level of N fertilization for Mamut wheat, but decreased with increasing level of N fertilization for Grana wheat. AJDW

67

Water concept in female livestock.
Shebaita, M. K.
World Review of Animal Production 13 (4) 37-44 (1977) [50 ref. En] [Atomic Energy Establishment, Cairo, Egypt]

48 Fayoumi laying hens (14 months of age) were used in a study on the validity of the 2 compartment (fat, and fat-free body) model of Pace & Rathbun [Journal of Biological Chemistry (1945) 158, 685] for female animals. Data are given for the body wt., the total body fat, fat-free body, total body water, lean dry body, total body protein and total body ash contents, the ratios between these values, and the relationships of these body composition values to the 2-compartment model. The results show water % in the fat-free body to be approx. constant at equal hen age; however, it increases with increasing body wt., body fat and fat-free body. Lean dry body, body protein and body ash (expressed as fractions of the fat-free body) decrease with increasing body wt., body fat and fat-free body. The water/lean dry body, water/protein and water/ash ratios showed significant positive relationships to body wt., body fat and fat-free body. On the basis of these results, the validity of the 2-compartment model is critically discussed. Equations are given relating body fat and water contents in chickens, pigs, sheep, deer and cattle. AJDW

68

How should frozen chicken be roasted?
McBride, R. L.; Kuskis, A.; Board, P. W.
CSIRO Food Research Quarterly 37 (3) 49-53 (1977) [9 ref. En] [CSIRO, Div. of Food Res., N. Ryde, NSW, Australia]

Commercially produced and processed frozen chickens, wt. 900 or 1500 g, individually wrapped in cryovac film, and stored at -20°C, were tested, using sensory methods, for the effects of: roasting unwrapped or wrapped in Al foil or oven bags; thawing before or during roasting; method of thawing; and cleaning and trimming. Results of sensory tests show that chickens roasted unwrapped had higher scores for colour, texture, flavour and general acceptability than chickens wrapped in foil or oven bags. Chickens thawed before cooking had higher scores for colour, flavour and texture than chickens roasted from frozen. Methods of thawing were not found to affect sensory properties of chickens. Carcasses trimmed before cooking were found to have better flavour and texture than carcasses left untrimmed and washed before cooking. SP

69

Temperature indicator.
Hughes, J. E.
British Patent 1 487 182 (1977) [En]

A temp. indicator for packaging with frozen chicken comprises a capsule, one half of which contains a dye which is liquid at room temp. and which is separated by a wall from a colourless or white absorbent for the dye. The capsule ruptures on freezing of the dye so the dye only reaches the absorbent on subsequent melting. GL

70

[Utilization of protein extracted from lucerne.]
Truchetto, M.
Industries de l'Alimentation Animale No. 12, 23-26 (1977) [Fr]

This paper on a lucerne leaf-protein isolate 'PXI', which contains approx. 50% protein, 500 p.p.m. carotene and 1000 p.p.m. xanthophylls, includes data showing the effects of diets containing PXI on the skin pigmentation of broilers and the yolk colour of eggs. The results show that addition of > 4.5% PXI to the diet considerably improved the skin pigmentation of broilers, the yolk colour intensity of eggs laid by hens fed diets containing 1.5-6.0% PXI increased with increasing level of PXI in the diet. AJDW

71

[Ultrastructural changes of muscle tissue of hens during freezing and subsequent refrigerated storage.]
Koreshkov, V. N.; Guslyannikov, V. V.
Kholodil'naya Tekhnika No. 8, 38-42 (1977) [12 ref. Ru] [Vses. Nauchno-issled. Inst. Kholodilnoi Promyshlennosti, USSR]

Electron microscopic changes in hen meat frozen in air (freezing rate 3-4 cm/h) or in liquid N (freezing rate 10-12 cm/h), packaged in heat-shrinkable film and stored for < 30 months at -18°, -30° or -50°C are described. Structural damage included changes in the membrane organelles and in the myofibrillar apparatus; changes were dependent on tissue type, freezing method, temp. and storage time. STI

72

[Antibiotic residues in meat and organs of broilers. II. Chlortetracyclin (CTC) residues after giving 0 to 275 p.p.m. with the feed during fattening.]
Rückstände von Antibiotika in Muskulatur und Organen von Schlachtgeflügel. II. Rückstände von Chlortetracyclin (CTC) nach Verabreichung mit dem Futter (0-275 ppm) während der Mastperiode.
Mulder, R. W. A. W.; Hulst-van Arkel, M. C. van

der
Archiv für Lebensmittelhygiene **28** (6) 214-216 (1977) [17 ref. De, en] [Inst. für Geflügelforschung 'Helt Spelderholt' Beekbergen, Netherlands]

8 groups of 15 broilers were supplied with 0-275 p.p.m. chlortetracycline (CTC) in the feed throughout 42 days of fattening. CTC residues were determined in liver, kidney and breast meat by microbiological assay using Bacillus subtilis 165 and BGA, and Micrococcus luteus ATCC 9341. Residues were detected in breast meat after 275 p.p.m., in liver after 50 p.p.m., and in kidneys after 2.5 p.p.m. CTC in the feed. Because of the many false-positive reactions in kidneys this tissue is not suitable for residue detection. [See FSTA (1978) **10** 4S629 for previous paper.] RM

73

Survey of Salmonella infection in the broilers of Mosul region.
Alam, A.; Al-Salman, M. H.; Beg, I. A.
Mesopotamia Journal of Agriculture **12** (1) 3-8 (1977) [16 ref. En, ar] [Dep. of Anim. Production, Coll. of Agric. & Forestry, Mosul Univ., Hammam Al-Alil, Mosul, Iraq]

Incidence of Salmonella infection in broilers in the College poultry farm and local private farms in the Mosul area was only 1 sample out of 1010 tested; the isolated serotype was Salmonella heidelberg. AL

74

Determination of benzo(a)pyrene in foods.
Saito, Y.; Sekita, H.; Takeda, M.; Uchiyama, M.
Journal of the Association of Official Analytical Chemists **61** (1) 129-135 (1978) [12 ref. En] [Dep. of Foods, Nat. Inst. of Hygienic Sci., 18-1 Kamiyoga 1-chome, Setagaya-ku, Tokyo, Japan]

An analytical method, suitable for routine use, was developed for determining benzo(a)pyrene in foods. The method consists of 4 cleanup steps: alkali cleavage of samples, preliminary silica gel column chromatography, selective extraction with conc. H_2SO_4, and further silica gel column chromatography. Recoveries of benzo(a)pyrene added to 50 g or 10 g food at levels of 0.4 or 2 ng/g, resp., ranged from 70% for short-necked clam and mackerel to 85% for chicken meat. The H_2SO_4 extraction step affords a simple method for isolating benzo(a)pyrene from various kinds of interfering substances which could not be separated by existing methods. AS

75

Gastrointestinal illness at Christmas.
Anon.
British Medical Journal **1** (6113) 659 (1978) [En]

An outbreak of suspected food poisoning at a staff Christmas party is described; approx. 70 of 113 people attending the party were affected. The main symptoms were diarrhoea and vomiting; some patients also experienced fever, malaise and limb pains. Consumption of cold chicken in bechamel sauce was strongly associated with gastrointestinal illness; there were no cases among those who had not eaten the chicken. It is possible that cooked chickens were contaminated during boning on the surface used for preparation of raw chickens for the oven; the boned meat was held overnight in a refrigerator. No food samples were available for bacteriological examination. It is concluded that the outbreak may have been due to Salmonella infection. AJDW

76

Controlled feeding of the layer. I. Restriction of the lysine and total feed intake of the pullet in the starter, grower and developer phases.
Connor, J. K.; Fuelling, D. E.; Barram, K. M.
Australian Journal of Experimental Agriculture and Animal Husbandry **17** (87) 581-587 (1977) [13 ref. En] [Dep. of Primary Ind., Yeerongpilly, Queensland, Australia]

[See following abstr. for part II.]

77

A note on protein requirement of pure-bred broiler chicks. II. Effect on carcass composition.
Gowda, G. D.; Rao, P. V.; Sadagopan, V. R.; Panda, B.
Indian Journal of Animal Sciences **47** (5) 306-307 (1977) [7 ref. En] [Indian Vet. Res. Inst., Izatnagar, Uttar Pradesh 243 122, India]

Eighty 7 day old broiler chicks of each of 3 breeds, White Plymouth Rock (WPR), New Hampshire (NH) and White Cornish (WC) were fed isocaloric experimental diets containing (i) 15, (ii) 18, (iii) 21 and (iv) 24% protein with a protein:calorie ratio of 200:1, 166:1, 143:1 and 125:1, resp. for 6 wk. Results of carcass analyses showed there was an increase in carcass protein from 54.9 to 67.5% for WPR, 55.0 to 65.7% for NH and 56.1 to 66.0% for WC for diets (i) and (iv) resp., an increase in moisture from 66.4 to 72.7% for WPR, 66.3 to 71.0% for NH and 65.7 to 70.2% for WC, for diets (i) and (iv) resp., and a decrease in carcass fat from 32.0 to 20.8% for WPR, 33.0 to 22.9% for NH and 35.0 to 21.7% for WC, for diets (i) and (iv) resp. SP

78

[Rearing of broilers separated by sex: effects of the broiler strain and the dietary protein/calorie ratio on carcass yield.]
Santos, A. A.; Campos, E. J.; Baiao, N. C.; Mouchrek, E.
Arquivos da Escola de Veterinaria, Universidade Federal de Minas Gerais **29** (3) 331-339 (1977) [11 ref. Pt, en] [Escola Vet., Univ. Fed. Minas Gerais, Belo Horizonte, Brazil]

Groups of male and female Peterson, Cobb and Hubbard broilers were reared from 29 to 56 days of

age on diets containing (i) 20% protein and 3100 kcal/kg; (ii) 18% protein, 2970 kcal/kg; and (iii) 16% protein, 2850 kcal/g. Protein/calorie ratios of (i), (ii) and (iii) were resp., 1:156, 1:165 and 1:178. The broilers were slaughtered at 56 days of age. Data are given for the body wt., carcass wt. and carcass yields of the broilers as influenced by sex, breed and diet, and by interaction between these factors. The results are discussed in detail. Significant sex × breed × diet interactions were observed for carcass yield. AJDW

79

Cryogenic gamma irradiation of prototype pork and chicken and antagonistic effect between Clostridium botulinum types A and B.

Anellis, A.; Shattuck, E.; Morin, M.; Srisara, B.; Qvale, S.; Rowley, D. B.; Ross, E. W., Jr.

Applied and Environmental Microbiology **34** (6) 823-831 (1977) [44 ref. En] [Food Sci. Lab., US Army Res. & Development Command, Natick, Massachusetts 01760, USA]

Inoculated, irradiated pork (2 300 cans) and chicken (2 000 cans) pack studies were performed to establish the 12D dose for these foods. Each can was inoculated with a mixture of 10^6 spores of each of 10 strains of Clostridium botulinum (5 type A and 5 type B), or a total of 10^7 spores. The cans received a series of increasing doses of γ rays (^{60}Co) at -30 ± 10°C; they were incubated for 6 months at 30 ± 2°C and examined for swelling, toxicity, and recoverable botulinal cells. The highest rate of swelling, for both foods occurred within the first wk of incubation, and max. swelling was observed within 4 to 5 wk. The minimal experimental sterilizing dose (ESD) based on flat, nontoxic sterile cans was 3.0 < ESD ≤ 3.2 Mrad for pork and 4.0 < ≤ 4.2 Mrad for chicken. An analysis of the partial spoilage data by extreme-value statistics indicated, with 90% confidence, that the rate of spore death in the 2 foods was not a normal distribution, but appeared to favour a shifted exponential function. Based on the latter distribution, and assuming 1 most resistant strain in the mixture of 10 used, the 12D dose computed to 4.37 Mrad with a shoulder of 0.11 Mrad, for pork and to 4.27 Mrad, with a shoulder of 0.51 Mrad, for chicken. An assumption that there were 2 or more most resistant strains in the inoculum progressively lowered the 12D dose. There was an apparent antagonism between the irradiated type A and B viable strains in the 2 foods. Cans with type B cells and toxin predominated over cans with type A cells and toxin, but cans with a mixture of type A and B toxins predominated over cans with a mixture of type A and B cells. At the highest sublethal doses, only type A cells survived in pork, but in chicken there was at least type B strain that was at least as resistant as type A strains. AS

80

Tissue residue studies on toxaphene in broiler chickens.

Bush, P. B.; Tanner, M.; Kiker, J. T.; Page, R. K.; Booth, N. H.; Fletcher, O. J.

Journal of Agricultural and Food Chemistry **26** (1) 126-130 (1978) [14 ref. En] [Extension Poultry Sci. Dep., Univ. of Georgia, Athens, Georgia 30602, USA]

Low levels of toxaphene (0, 0.22, 0.40, 2.16 or 3.82 p.p.m.) were added to the diets of unsexed broiler chicks from 1 day of age. Each treatment consisted of 90 randomly selected birds (30 birds in each of 3 replicates). On the sixth week, 15 birds in each replicate were transferred to floor pens and fed toxaphene-free feed. 3 birds from each of the replicates were sacrificed at 2-wk intervals. Liver, heart, gizzard, kidneys, skeletal muscle, and fat tissue samples were taken for residue analysis. The accumulation of toxaphene in the adipose tissue of 8-wk-old broilers was best described by the equation, $y = 0.765 + 4.081x$, where y = p.p.m. of toxaphene in adipose tissue, and x = p.p.m. of toxaphene in the ration (detectability limit = 1.0 p.p.m.). Toxaphene dissipation was characterized by the following equation: y = exponential [-0.280 x + 1.97]. Histopathological examination of 4- and 8-wk-old birds revealed no significant lesions in any of the tissues examined. AS

81

[Salmonella in refrigerated broilers.] Vorkommen von Salmonellen in Kühlgeflügel

Schlechter, [illegible]

Bonatz, M. T.; Hauck, M. Z.

Archiv für Lebensmittelhygiene **28** (6) 217-218 (1977) [11 ref. De, en] [Bundesforschungsanstalt für Ernährung, Engesserstrasse 20, 7500 Karlsruhe 1, Federal Republic of Germany]

Massive contamination with salmonellae may occur during cold storage of freshly slaughtered chickens. At +1°C, total concn. was > 10^3/100 cm^2 after 2 wk in nearly all cases and counts of 10^5/100 cm^2 were not exceptional. The growth of salmonellae was effectively inhibited in an O_2-free atm (pure CO_2) even after 4 wk storage. A storage atm of 50% CO_2, 50% N_2 was highly effective after 2 wk but not after 3 wk. An atm of 20% CO_2, 80% N_2 delayed growth of salmonellae for 2 wk, but counts increased to 10^4/100 cm^2 in the third wk. AS

82

[Changes in the muscle pH of broilers, in relation to the year of production.] Verlauf des pH-Niveaus von Broilern in Abhängigkeit von den Jahresproduktionen.

Ristic, M.; Schön, L.

Archiv für Geflügelkunde **41** (6) 253-256 (1977) [8 ref. De, en, fr, ru] [Inst. für Fleischforschung, Oskar-von-Miller Strasse 20, D-8650 Kulmbach, Federal Republic of Germany]

Studies were conducted on the pH of breast and thigh muscle of a total of 2180 broilers, over the period 1968-1976. Effects of cold storage (at -10°, -15°, -20° or -30°C for various periods) on muscle pH were also studied, together with effects of time post-mortem (≤ 24 h), cooling method (in air or in water) and scalding temp. (48-50°C or 56-58°C).

Tables of results are given. The results show that: mean pH values in breast and thigh meat differ (5.86 and 6.44, resp.); pH values in both breast and thigh muscle increased during the period 1968-1976, this increase being greater in thigh than in breast muscle; breast muscle pH was significantly influenced both by storage temp. and storage time; thigh muscle pH was significantly influenced only by storage time; muscle pH tended to decrease during the period ⩽24 h after slaughter, the change being greater for breast than for thigh; and cooling method and scalding temp. had little effect on muscle pH. AJDW

83

[Limitation of fat deposition in broilers by a mild feed restriction between 6 and 8 weeks of age.]
Simon, J.; Zybko, A.; Guillaume, J.; Blum, J. C.
Archiv für Geflügelkunde **42** (1) 6-9 (1978) [10 ref. Fr, en, de, ru] [Sta. de Recherches Avicoles, INRA, 37380 Nouzilly, France]

1964 male and 1560 female Hubbard broiler chicks were used in a study on effects of feed restriction on fat deposition in the carcass. Diets were fed containing 17 or 19% protein; from 0 to 6 wk of age, the diets were fed ad lib.; from 6 to 8 wk of age, feed allowance of some groups was reduced to 90, 92 or 94% of the ad lib. level. Tables of results are given, including data for abdominal fat wt. and %, and the DM, lipid and protein (N × 6.25) contents of the carcass. Abdominal fat content was significantly altered only at 8-10% feed restriction; this level of feed restriction also adversely affects body wt. and feed efficiency. Effects of feed restriction or dietary protein level on the DM and protein concn. in the carcass were small. AJDW

84

Retail brands of frozen fried chicken one-third price of take-out units.
Martin, S.
Quick Frozen Foods **39** (8) 16-18, 20, 22, 24-25 (1977) [En]

Investigations were carried out using 5 brands of frozen fried chicken and 2 commercially prepared chicken products (from fast food establishments). Frozen products were evaluated for: number of pieces; flavour; texture; accuracy of directions; yield; ingredient proportions; cost/oz; cost/serving; and packaging. It was concluded that: retail frozen chicken cost 8 cents/oz compared to 23 cents/oz for take-out; frozen breading was heavier; it took as long to buy take-out as to heat frozen; and only one frozen brand was rated below 'good' in flavour. Most retail products were equal or superior to fast food establishments in flavour and quality. VJG

85

The effect of antimicrobial feed additives on the colonization of the alimentary tract of chickens by Salmonella typhimurium.
Williams Smith, H.; Tucker, J. F.
Journal of Hygiene **80** (2) 217-231 (1978) [3 ref. En] [Houghton Poultry Res. Sta., Houghton, Huntingdon, Cambs., PE17 2DA, UK]

Groups of 33 chickens were fed continuously on diets containing feed additives that are employed commercially for a variety of purposes, and were infected orally when 4 days old with a nalidixic acid-resistant mutant of Salmonella typhimurium. The amount of S. typhimurium organisms excreted in their faeces was estimated by culturing them at intervals and in a standard manner on brilliant green agar containing sodium nalidixate; when the chickens were killed their caecal contents were examined by the same technique. Avoparcin and lincomycin, like nitrovin and tylosin favoured colonization of the alimentary tract by S. byphimurium organisms as shown by the fact that the chickens to which they were fed excreted these organisms in their faeces in higher concn. and for longer periods of time than did chickens fed on non-medicated diets. Amprolium, monensin, dimetridazole, arsenilic acid and nitro-hydroxyphenylarsenate had no obvious effect on the salmonella excretion pattern. When only 5 chickens in each group were experimentally infected so that the effect of the feed additives on infections acquired by contact could be monitored, avoparcin, lincomycin, nitrovin, dimetridazole and tylosin favoured colonization of the alimentary tract with the S. typhimurium organisms. Arsenilic acid hindered the development of infection. Amprolium, monensin and nitro-hydroxyphenylarsonate were without obvious effect. Many of the chickens that were fed on diets that favoured S. typhimurium colonization, but not those fed on non-medicated diets, were still excreting S. typhimurium organisms in their faeces when they were killed at 56 days of age, the age at which broiler chickens kept under commercial conditions are usually slaughtered. AS

86

Inactivation of salmonellae on chilled and deep frozen broiler carcasses by irradiation.
Mulder, R. W. A. W.; Notermans, S.; Kampelmacher, E. H.
Journal of Applied Bacteriology **42** (2) 179-185 (1977) [22 ref. En] [Processing Dep., Spelderholt Inst. for Poultry Res., Beekbergen, Netherlands]

240 broiler carcasses, wt. approx. 1 kg, were either chilled i.e. scalded at 52°C, air-chilled at 0°C for 60 min and held at 5°C, or deep frozen, i.e. scalded at 60°C, immersion chilled, packaged and deep-frozen at -40°C for 20 h and held at -20°C. The deep-frozen broilers were packed in polystyrene boxes and irradiated 14 days after slaughter. The chilled broilers were also packed but irradiated immediately after slaughter. A dose of 250 krad was applied. Total number of salmonellae present was estimated by the MPN method, before and after radiation treatment. Samples were taken from the neck skin, pericloacal skin and lateral skin/carcass. The salmonellae isolation method was based on an official standard. Results show that the

radiation dose (250 krad) reduced considerably the total number of salmonellae on every contaminated broiler carcass (chilled or frozen). However, salmonellae were isolated in 2 out of a total of 48 samples from chilled carcasses. This may have been due to contamination from handling. No salmonellae were isolated from deep frozen broiler carcasses after irradiation. 250 krad reduced naturally-occurring salmonellae by 2.5 log cycles. SP

87

Effect of different dietary protein levels and calorie protein ratio on dressing loss and evisceration loss during processing of broilers.
Ayodhya Prasad
Indian Poultry Gazette 61 (2) 71-72 (1977) [4 ref. En] [Div. of Poultry Res., Indian Vet. Res. Inst., Izatnagar, Uttar Pradesh, India]

Increasing the protein level in the diet of broilers from 20 to 23%, or widening the calorie/protein ratio from 122:1 to 153:1 did not significantly influence the % dressing loss or % evisceration loss during processing of broilers. CFTRI

88

Energy use and costs in broiler processing plants in the South.
Jones, H. B., Jr.; Lee, S. R.
Research Bulletin, Agricultural Experiment Stations, University of Georgia No. 205, 47pp (1977) [21 ref. En] [Coll. Exp. Sta., Univ. of Georgia, Athens, Georgia, USA]

This study presents energy consumption patterns and costs for broiler processing plants in Georgia and Alabama in 1975-1976. Seasonality of use and forms of energy required are given for various size plants at different vol. levels. Natural gas, fuel oil and electricity are the major types of energy used, with natural gas and fuel oil accounting for 65% of total consumption and 22% of costs. Annual fuel consumption was 7.41 therms/1000 eviscerated lb, with somewhat more in small and less in large plants. Electricity accounted for 35% of energy consumption and 78% of costs, with 66 kWh/1000 lb processed used for primary processing, or 115 kWh when freezers, waste disposal and office facilities were included. Both energy consumption and costs have seasonal patterns with fuel use higher in winter and electricity use higher in summer. Higher energy prices will increase costs substantially unless conservation practices are adopted. The impacts of selected price increases are evaluated. Fuel conservation efforts may produce greater overall energy savings for plants, but electricity conservation is likely to produce the greatest dollar savings. AS

89

How nutritious are frozen dinners.
Martin, S.
Quick Frozen Foods 39 (4) 40-42, 44-46, 49-50, 52 (1976) [En]

12 boxes of each brand and size of dinner tested were purchased in supermarkets in the Greater St. Louis area. Tests were conducted for all elements that the FDA would require for food package labelling. Analysis of all top brands of frozen fried chicken dinners revealed that they ranked far higher in protein than the FDA-suggested voluntary standard and were rich in other essential nutrients. The regular sized chicken dinners averaged from 42 to > 54% of the US min. adult daily protein requirement; large dinners ranged to nearly 74%. The FDA was suggesting 33⅓%. Other characteristics of chicken dinners are that they: contain one thirty-fifth as much cholesterol as a fresh egg; provide > 100% of daily adult requirement of vitamin A; average 1-3 oz more product wt./package than that printed on the label; and average about 585 calories. VJG

90

[Quality for quick frozen foods in the retail market.]
Hiele, T. van
Koeltechniek-Klimaatregeling 71 (2) 16-19 (1978) [Nl] [Sprenger Inst., Wageningen, Netherlands]

A summary is given of the findings of a survey, initiated by a joint EEC/Codex Alimentarius group, into the general quality of quick frozen foods, (chicken, beans, cod) being offered in typical retail refrigerated cabinets, with particular reference to the major factors influencing the quality. The main findings were: there was no demonstrable relation between the quality of a quick frozen product and its temp. at the time of sale in the cabinet; product temp. > -18°C and > -12°C were found in 70% and 20-40% of samples; temp. > -12°C were found most frequently in self-service stores; 0% of the 201 chicken samples, 6% of the 202 green bean samples and 9% of the 204 cod samples were of unsatisfactory quality; and quality of a quick frozen product was not obviously related to the conditions prevailing in the cabinet. Some information on stock rotation is also given. HBr

91

A note on growth rate and meat production in desi and exotic fowls, and their intermated (F_2) cross-groups.
Menawat, S. N.; Jain, L. S.; Sharma, V. V.
Indian Journal of Animal Sciences 47 (12) 854-855 (1977) [1 ref. En] [Dep. of Anim. Husbandry, Univ. of Udaipur, Udaipur 313 001, India]

The effect of 2- and 3-way crosses between White Leghorn (W), Rhode Island Red (R) and desi (D) fowl on meat production was studied. Birds were slaughtered at 10 wk of age, and the dressing procedure of Jain et al. [See FSTA (1978) 10 2S284] used. Results (as % of live wt.) showed that among the crosses, dressed wt. was highest for RD (79.1) and lowest for RR (76.2); edible portion highest for RD (73.7) and lowest for RR (70.0);

carcass wt. highest for DD and RD (68.8) and lowest for RR (64.6); and giblet wt. highest for RR (5.4) and lowest for DD (4.8). SP

92

[Optimal pattern of sterilization of canned products in rotating autoclaves.]
Khlebnikov, V. I.; Bobrikova, E. G.; Kakhorov, M. K.; Nazarov, V. D.; Ryakhovskii, I. P.
Myasnaya Industriya SSSR No. 1, 31-33 (1977) [7 ref. Ru] [Nauchno-proizvodstvennoe Ob'edinenie Ptitsepererabaty-vayushchei i Kleezhelatinovoi Promyshlennosti 'Kompleks', USSR]

The rate of heating of chicken meat (in 20 × 20 × 20 mm cubes) in 250 ml cans increases with increasing proportion of liquid phase and increasing rotation rate. Heating is accelerated by agitation of the water in the autoclave and of the can contents. Rotation rates ⩾ 15 rev/min cause clouding of the juice; at 25-30 rev/min, the meat cubes disintegrate. 15 rev/min gives optimal results. Effects of headspace vol. (6, 8, 10 or 12%) were evaluated in studies using 250 ml cans (with 20% liquid phase) sterilized at 130°C, 15 rev/min. The results show that heating rate tends to increase with increase in headspace vol. Increasing the headspace vol. by 1% increases heating rate by approx. 2.5% over the range studied. Sterilization at 135°C, which gave rapid processing, resulted in tough meat which was difficult to remove from the bones. Meat sterilized at 125°C was similar to that cooked normally, and was free of 'sterilized meat' off-flavour. STI

93

[Effect of CO_2 and NH_3 concentration, and transport on broilers.] [Lecture]
Ehinger[Echinger], F.
Proceedings of the European Meeting of Meat Research Workers No. 23, B2:1-B2:19 (1977) [6 ref. Ru, De] [Univ. Hohenheim, Lehrstuhl für Kleintierzucht, D7000 Stuttgart, Federal Republic of Germany]

Temp., RH, and CO_2 and NH_3 concn. were measured in the confined space in which 3000 broilers were transported in 150 cages from the point of raising to the point of processing, where wt. losses and meat quality were checked. The temp. in the confined space was on average 5°C higher than the outdoor temp., and rose considerably at each stop, with a corresponding rise in CO_2 concn. Transportation time was found to have a significant effect, especially on meat tenderness. [See FSTA (1978) **10** 8S1048.] STI

94

The microstructural differences between chilled and thawed products of animal origin. [Lecture]
Guslyannikov, V. V.; Dibirasulaev, M. A.; Koreshkov, V. N.; Piskarev, A. I.
Proceedings of the European Meeting of Meat Research Workers No. 23, D13:1-D13:27 (1977) [12 ref. En, Ru] [Vses. Nauchno-issled. Inst. Kholodil'noi Promyshlennosti, Moscow, USSR]

Beef, pork, mutton and chicken meat were studied by histological methods and electron microscopy during chilling, refrigeration, freezing and thawing. It was established that every chilling method involving water crystallization in the tissue resulted in characteristic changes which were not affected by the subsequent defrosting method or storage time. Some differences in structural changes were established, depending on the product, its post-mortem state and heat-processing conditions. The application of the histological method made it possible to differentiate between chilled and thawed products, and to determine the refrigeration method used. A quick histological method was developed and is recommended for the use in laboratories as well as commercial practice. [See FSTA (1978) **10** 8S1048.] STI

95

[Justification of sterilization temperature for canned homogenized poultry meat, based on biological evaluation.] [Lecture]
Gonotskii, V. A.; Korotaeva, M. M.; Petrovskii, K. S.; Terekhin, S. P.; Khovaeva, L. A.; Chvanenko, I. I.
Proceedings of the European Meeting of Meat Research Workers No. 23, G2:1-G2:9 (1977) [3 ref. Ru, De] [Nauchno-issled. Ob"edinenie Ptitsepererabatyvayushchei i Kleezhelatinovoi Promyshlennosti 'Kompleks', Moscow, USSR]

The effect of sterilization on the biological value of chicken meat and canned homogenized chicken meat heated to 115°, 120°, 125°, 130° or 135°C was studied. Sterilization temp. were established for canned homogenized poultry meat, giving maximum retention of nutritive value. [See FSTA (1978) **10** 8S1048.] STI

96

[Isolation and characteristics of chicken pepsin.] [Lecture]
Volik, V. G.; Dolgikh, T. V.; Lobzov, K. I.; Novgorodova, N. S.
Proceedings of the European Meeting of Meat Research Workers No. 23, K5:1-K5:19 (1977) [5 ref. Ru, Fr] [Nauchno-proizvodstvennoe Ob"edinenie Ptitsepererabatyvayushchei i Kleezhelatinovoi Promyshlennosti "Kompleks", Moscow, USSR]

The isolation of pepsin is based on autolysis of ground glandular stomachs and salting out of the enzyme. The most favourable conditions for the autolysis and salting out were established. Chicken pepsin possesses some properties similar to rennet and decisive for cheese quality. Cheese manufactured with the use of chicken pepsin was practically equal in quality to cheese produced with rennet. [See FSTA (1978) **10** 8S1048.] STI

97

[Sanitary-hygienic evaluation of dressed birds cooling methods.] [Lecture]
Kashchuk, V. F.; Stepanov, V. A.; Tsvetkov, A. I.
Proceedings of the European Meeting of Meat Research Workers No. 23, L11:1-L11:13 (1977) [Ru, De] [Nauchno-proizvodstvennoe Ob"edinenie Ptitsepererabatyvayushchei i Kleezhelatinovoi Promyshlennosti 'Kompleks', Moscow, USSR]

Dressed broilers cooled using various types of immersion coolers were investigated, in order to establish the most suitable cooling methods from the hygienic point of view, and with respect to subsequent storage at 0° and +4°C. Broilers cooled by spraying and immersion in a cooling bath containing 20 mg active Cl/l. had the best keeping quality, with reduced counts of psychrophilic microorganisms and low contents of free water absorbed. [See FSTA (1978) 10 8S1048.] STI

98

[Determination of bacterial contamination of poultry meat at various incubation temperature of the inoculated microorganisms.] [Lecture]
Kashchuk, V. F.; Stepanov, V. A.; Tsvetkov, A. I.
Proceedings of the European Meeting of Meat Research Workers No. 23, L13:1-L13:10 (1977) [6 ref. Ru, De] [Nauchno-proizvodstvennoe Ob"edinenie Ptitsepererabatyvayushchei i Kleezhelatinovoi Promyshlennosti 'Kompleks' Moscow, USSR]

The bacterial contamination of dressed broilers was studied immediately after dressing and after 6 days storage at 0°C. The inoculated culture media were incubated at 0°, 20°, 25°, 30° and 37°C. The highest counts of mesophiles and psychrophiles were detected with incubation at 25°C for 72 h. [See FSTA (1978) 10 8S1048.] STI

99

Evaluation of Hiproly-type barleys fed to rats, pigs, broilers and laying hens.
Thomke, S.; Rundgren, M.; Elwinger, K.
Swedish Journal of Agricultural Research 8 (1) 39-53 (1978) [33 ref. En] [Dep. of Anim. Husbandry, Univ. of Agric. Sci., S-75007 Uppsala, Sweden]

This paper on feeding trials using crosses between Hiproly (a high protein content/high protein quality barley var.) and high-yielding Swedish normal barley var. includes data for the backfat thickness, slight of lean, longissimus dorsi area, and % meat and bone in the l. dorsi cut and in the ham of pigs fed 14% protein diets based on normal or Hiproly-hybrid barleys, with soybean meal added to standardize protein content of the diet. The results show that carcass quality of pigs receiving the various diets differed relatively little; this confirms that use of diets based on Hiproly-type barley permits reduction of the amount of protein supplement used. AJDW

100

Optimal wavelengths for detecting chicken broiler bruises.
Bell, M. K., Jr.; Allison, J. M.
Transactions of the ASAE 20 (6) 1155-1159 (1977) [13 ref. En]

The wavelengths or combinations of wavelengths allowing optical detection of bruised broiler tissue were investigated. Tabulated results from bruises 0.5-48 h old were used to derive a discriminate function which allowed bruise discrimination with a high degree of reliability. RM

101

[Incidence of Listeria monocytogenes in the intestinal contents of broilers on various farms.]
Dijkstra, R. G.
Tijdschrift voor Diergeneeskunde 103 (4) 229-231 (1978) [2 ref. Nl, en] [Kruisstraat 43, Leeuwarden, Netherlands]

Examination of the intestinal contents of 3090 broilers, < 5 wk old, from 1025 broiler houses showed 243 positive cases of L. monocytogenes, from 23.7% of the broiler houses. Reinfection occurred < 8 times in succession after infected fowls had been taken to poultry slaughterhouses, in spite of cleaning and disinfection. The potential human health hazard is discussed. RM

102

Evaluation of pure and cross-bred broilers for dressing yield.
Mohapatra, C. M.; Sahoo, B. N.; Das, P. K.; Bala, M. K.
Indian Poultry Gazette 61 (3) 103-105 (1977) [9 ref. En] [Poultry Meat Project, Orissa Coll. of Vet. Sci. & Anim. Husbandry, Orissa Univ. of Agric. & Tech., Bhubaneswar, Orissa, India]

The dressing yield of purebred (PB) and crossbred (CB) strains of Cornish and New Hampshire broilers was evaluated. The dressing yield of 10-wk old birds was higher in CB (67.51%) than in PB (65.42%). CFTRI

103

Factors affecting chicken bleed out - a review. [Review]
Abram, J.; Goodwin, T. L.
World's Poultry Science Journal 33 (2) 69-75 (1977) [7 ref. En, fr, de] [Dep. of Anim. Sci., Univ. of Arkansas, Fayetteville, Arkansas 72701, USA]

Direct comparisons between the blood losses found in different slaughter methods are few, but in general mechanical stunning followed by severing of one or both carotid arteries and jugular veins gives the best bleed out. Starvation before slaughter, injection of epinephrine, variation in temp., injection of thiouracil and dicumoral have all been ineffective in increasing blood loss. Since the

max. increase in blood loss that could be achieved is approx. 20%, it is question-able whether complex measures to improve bleed out would be economically justifiable. JRR

104

[Investigations on the use of wheat rich in protein for broiler feeding. IV. Nutrient and amino acid content of the consumable parts.] Untersuchungen zum Einsatz von rohproteinreichem Weizen in der Broilerfütterung. IV. Nährstoff- and Aminosäurengehalt der verzehrbaren Teile.
Gruhn, K.; Jahreis, G.
Nahrung **21** (10) 911-917 (1977) [20 ref. De, en, ru] [Sektion Tierproduktion & Veterinärmed., Karl-Marx-Univ., Leipzig, German Democratic Republic]

4 groups, each comprising 8 male and 8 female broilers, were used in a feeding trial to evaluate effects of diets based on high-protein wheat on the composition of the edible parts of the carcass. 4 diets were tested, containing (i) maize, (ii) high-protein wheat, without amino acid supplements, (iii) high-protein wheat, with 0.05% L-lysine + 0.05% DL-methionine; and (iv) high-protein wheat, with 0.25% L-lysine + 0.15% DL-methionine. Total protein contents of the diets were adjusted to compensate for the lysine and methionine supplements. The broilers were slaughtered at 56 days of age, and the DM, crude protein and crude fat contents and amino acid compositions of the total edible material (meat, gizzard, heart, liver, abdominal fat) were determined. Tables of results are given. The results show no significant differences in composition attributable to diets (i)-(iv), except that the edible material of carcasses of females fed (i) contained significantly less DM than that of females fed (ii), (iii) or (iv). IN

105

Utilization of high-fat, low-protein coconut press residues in broiler rations.
Gerpacio, A. L.; Querubin, L. J.; Banes, M. S.; Pascual, F. S.; Mercado, C. I.
Philippine Journal of Coconut Studies **2** (3) 31-37 (1977) [11 ref. En] [Dep. of Anim. Sci., Coll. of Agric. Univ. of the Philippines, Los Banos, Laguna, Philippines]

High-fat low-protein coconut residues from pared nuts ((i) Coco Res B) and unpared nuts (Coco Res (ii) C and (iii) CK) were evaluated as energy substitutes for 30% or 50% of yellow corn in broiler rations fed to day old broiler chicks up to 6 wk of age. The effect of pelleting feed mixtures containing coconut residues was also compared with that of the same ration fed in the form of mash. Dressing %, with giblets, of broilers fed coconut residues (i), (ii) and (iii), resp. (mean of 3 replicates) were 71.18, 69.43 and 69.57 with 50% substitution, as mash, 72.71, 68.53 and 70.29 with 50% substitution, pelleted, and 71.72, 71.05 and 75.06 with 30% substitution, pelleted. Dressing %, without giblets, for broilers fed (i), (ii) and (iii) resp., were 64.96, 65.07 and 63.61 with 50% substitution, as mash, 67.23, 62.34 and 63.99 with 50% substitution, pelleted, and 66.55, 65.15 and 69.15 with 30% substitution, pelleted. The effects of treatments were not significantly different and no significant effect of form of ration fed, type of coconut residue or level of replacement of yellow corn in broiler rations was obtained. SP

106

[Lipids in the liver of the domestic fowl (Gallus domesticus) and the pheasant (Phasianus colchicus) during post-incubation development.]
Sova, Z.; Vrbenska, A.; Junkova, A.; Sevcikova, I.; Janda, J.
Sbornik Vysoke Skoly Zemedelske v Praze, Fakulta Agronomicka, B No. 2, 19-28 (1976) [16 ref. Cs, en, ru] [Katedra Fyziologie Hospodarskych Zvirat, Vysoka Skola Zemedelska, Prague-Suchdol, Czechoslovakia]

Lipid concn. were determined in the livers of 135 chickens from hatching up to 59 days of age, and in the livers of 70 pheasants from hatching up to 96 days of age. Tables and a graph of results are given, presenting values for the DM and lipid contents of the liver. Lipid content of chicken liver (g/100 g wet wt.) was 10.28 at hatching, increased to 14.36 at 5 days of age, decreased to 4.56 at 13 days of age, then decreased with increasing age to 2.2 at 59 days of age. Lipid concn. in pheasant liver (g/100 g wet wt.) was 17.96 at hatching, decreased to 4.42 at 14 days of age and then varied little during the remaining age range studied. AJDW

107

[Physicochemical and sensory indices of hen meat quality.]
Petchenko, V. I.; Ratushnyi, A. S.
Izvestiya Vysshikh Uchebnykh Zavedenii, Pishchevaya Tekhnologiya No. 6, 33-36 (1977) [5 ref. Ru] [Moskovskii Ordena Trudovogo Krasnogo Znameni Inst. Narodnogo Khozyaistva im. G. V. Plekhanova, Moscow, USSR]

White, heat processed hen meat, has less juice than correspondingly processed red meat; this may be due to a lower content of strongly bound water, less intramuscular fat, lower pH and different fractional composition of the proteins. Additions of tartaric acid and citric acid reduce the losses of moisture, increase the strongly bound water content and the transformation of collagen into gelatin, and improve juiciness and all the sensory indices of the meat. Studies on possible increase in tenderness of the white meat of hens by means of artificial enrichment with fat are recommended. STI

108

Apparatus for producing rough breading texture on fried chicken.
Castellano, C. T.; Morris, R. L. (International

Telephone & Telegraph Corp.)
United States Patent 4 078 517 (1978) [En]

109

Chemical and sensory changes in freeze-dried chicken and pork during high temperature, oxygen-free storage.
Townsend, W. E.; Klose, A. A.; Lyon, B. G.
Journal of Food Science 43 (1) 1-5, 9 (1978) [24 ref. En] [Anim Products Util & Marketing Res. Lab., USDA, PO Box 5677, Athens, Georgia 30604, USA]

Chemical and sensory changes were determined in cooked diced chicken, and raw and cooked sliced pork that were freeze dried to residual moisture levels of < 2% and stored in sealed cans under N_2 at -40°, 28°, 38° and 48° C for 1, 3 or 6 months. Orsat analysis of headspace gas confirmed the absence of O_2 and no CO_2 developed during storage. Level of glucose in general decreased with increasing temp. and time of storage. Lactic acid content was 50 to 100-fold that of glucose on a molar basis and exhibited no detectable change over 6 months at temp. up to 48° C. No appreciable change in the level of α-amino N was apparent. Reducing substances, expressed as ascorbic acid, increased with temp. and time of storage. There were no marked changes in % rehydration due to storage temp. and time for cooked diced chicken, and raw and cooked sliced pork. Sensory evaluation, by triangle tests, of the differences between control samples at -40° C and samples at 28°, 38° and 48° C detected deterioration in cooked chicken at 48° C after > 1, and at 38° C after > 3 months. For raw pork, significant deterioration was detected at 38° and 48° C after > 3 months. For cooked pork significant deterioration was detected at all storage times and temp., compared to the control. IFT

110

[Effects of Mycoplasma synoviae infection on the health, reaction to vaccination and fattening results in broiler chickens.]
Goren, E.
Tijdschrift voor Diergeneeskunde 103 (7) 361-366 (1978) [16 ref. Nl, en] [Gezondheidsdienst voor Pluimvee, Doorn, Netherlands]

Studies on 4 groups of broilers infected with M synoviae revealed adverse effects on final wt. and table quality of the animals, especially in combination with inoculation against Newcastle disease and infectious bronchitis. RM

111

Apparatus for removing a fowl from a conveyor.
Meyn, P.
United States Patent 4 071 924 (1978) [En]

An apparatus is described for removing a fowl from an overhead conveyor travelling along a path which is part of a circle. The conveyor includes at least 1 generally U-shaped conveyor hanger having legs with hooks at its lower end for gripping the fowl's ankle joints. IFT

112

A comparison of the effect of oleandomycin and oxytetracycline supplementation on the growth and the meat quality of Dokki-4 chicks reared in hot weather.
El-Gammal, A. M.; Makled, M. N.; Kosba, M. A.; Faltas, A. A.
Beiträge zur Tropischen Landwirtschaft und Veterinärmedizin 15 (3) 313-320 (1977) [En, de, es, fr, ru] [Assiut Univ., Assiut, Egypt]

24 wk trials on 1000 chicks reared at mean temp. of 32.5° C (90.5° F) showed that supplementation of the basal diet with 20 p.p.m. antibiotics had marked positive effects on growth rates and carcass quality (improved carcass fleshing, especially breast meat). The effect was greater in male than in female animals, and was affected by the type of antibiotics. 5 p.p.m. supplements had no effect. RM

113

Fresh, dried and sterilized manure of chicks, sheep and cattle as feedstuff for growing chicks.
Al-Zujajy, R. J.; Marai, I. F. M.; Hammady, H. Y.
Beiträge zur Tropischen Landwirtschaft und Veterinärmedizin 15 (1) 55-60 (1977) [7 ref. En, de, ru, fr, es] [Fac. of Agric., Univ. of Sulaymanyia, Iraq]

The ration of growing chicks was supplemented with 4% fresh, dried (45-50° C) or sterilized (90° C, 30 min) chick, sheep or cattle excreta, and wt. gain, food utilization and slaughter yield were compared with a control group on a commercial growing ration. Tabulated results showed better growth rates in supplemented groups, decreasing in the order fresh > dried > sterilized > control, and chick > sheep > cattle. Slaughter yields (dressing %) were between 70 and 76% and showed the same trends. RM

114

Influence of zinc ions on postmortem and physical properties of chicken muscle.
Whiting, R. C.; Richards, J. F.
Canadian Institute of Food Science and Technology Journal 11 (2) 62-65 (1978) [31 ref. En, fr] [Dep. of Food Sci., Univ. of British Columbia, Vancouver, British Columbia V6T 1W5, Canada]

Addition of mM levels of Zn ions to red and white poultry muscle altered postmortem behaviour and functionality. Ageing slurries of muscle fibres with Zn reduced fibre shortening (determined by settled vol.) and prolonged the period of isometric tension and release without affecting the max. isometric tension or time of max. tension. Injecting prerigor muscle with Zn increased the shear force of the meat after ageing and cooking. Zn was not sequestered by the sarcoplasmic reticulum and slightly reduced Ca uptake by the sarcoplasmic reticulum. The extract release vol. of muscle was increased when Zn was added either pre- or postrigor. The emulsifying capacity of the salt-soluble proteins was increased by addition of 1 mM Zn ions. AS

115

Water-extractable calcium and zinc in red and white chicken muscle during aging and thaw rigor.
Whiting, R. C.; Richards, J. F.
Canadian Institute of Food Science and Technology Journal 11 (2) 59-61 (1978) [22 ref. En, fr] [Dep. of Food Sci., Univ. of British Columbia, Vancouver, British Columbia V6T 1W5, Canada]

Changes in the tissue levels of water-extractable Ca and Zn were compared to the known shortening behaviour of red and white muscles undergoing ageing, thaw rigor or cold shortening. The extractability of Ca and Zn increased during the ageing of poultry muscle as the adenosine triphosphate (ATP) concn. declined. During thaw rigor ATP was depleted rapidly and, in white muscle, the free Ca and Zn declined for 3 min before increasing. In red muscle, the extractable Ca and Zn concn. increased from the initial levels when the muscle was blended while frozen. Extractable Zn levels increased slightly after cold treatment but no change in Ca concn. was detected. AS

116

[Studies on protein and amino acid metabolism in laying hens fed ^{15}N-labelled casein. VIII. ^{15}N-incorporation into N-fractions and the amino acids of various parts of the body.] Untersuchungen zum Protein- und Aminosäurenstoffwechsel der Legehennen mit ^{15}N-markiertem Kasein. 8. ^{15}N-Inkorporation in die N-Fraktionen und in die Aminosäuren verschiedener Körperbestandteile.
Richter, G.
Archiv für Tierernährung 27 (12) 711-720 (1977) [22 ref. De, en, ru] [Fachgruppe Tierernährung, Sektion Tierproduktion & Veterinärmed., Karl-Marx-Univ., Leipzig, Jena, German Democratic Republic]

This paper includes tables of data showing the contents of DM, total N and trichloroacetic acid-soluble N in the meat, bones, liver, kidneys and other viscera of Leghorn hens, together with data for the amino acid composition of the meat, and concn. of lysine, histidine and arginine in the liver and kidneys. AJDW

117

Growth and laying performance of medium-type pullets subjected to quantitative and qualitative food restriction.
Maclachlan, R. C.; Saunders, A. J.; Gous, R. M.
South African Journal of Animal Science 7 (2) 97-103 (1977) [7 ref. En, af] [Dep. of Animal Sci. & Poultry Sci., Univ. of Natal, Pietermaritzburg 3200, South Africa]

1400 1-day-old Saunders S101 pullets were used in a study on effects of feed restriction on growth, carcass composition and laying performance. 6 treatments were tested: a control diet; a pullet developer diet (similar to the control, but with a low-protein diet after 12 wk age); a low-protein diet (protein content being reduced at intervals during the growing period); and 3 quantitative restriction programmes designed to reduce body wt. at 20 wk of age by 6, 12 and 18% relative to control pullets. Data are given for moisture, protein, and fat concn. in the carcass at 13 and 20 wk of age. The results at 13 wk of age show no significant variation in carcass composition attributable to treatment, and no significant differences in moisture or protein contents at 20 wk of age. However, the control and pullet developer treatments gave significantly higher carcass fat contents than the other diets, and the low-protein diet gave significantly higher carcass fat content than the diets designed to give 12 and 18% body wt. loss. Data are also given for egg production and egg wt. AJDW

118

Carcass amino acid composition and utilization of dietary amino acids by chickens.
Saunders, A. J.; Wessels, J. P. H.; Gous, R. M.
South African Journal of Animal Science 7 (2) 111-115 (1977) [21 ref. En, af] [Dep. of Animal Sci. & Poultry Sci., Univ. of Natal, Pietermaritzburg 3200, South Africa]

1-wk-old chickens were used in a study on the effect of diet on the amino acid composition of chicken carcasses. Diets studied contained fish meal or sunflower meal as N-sources; an N-free diet was also tested. The experimental diets were fed for 7 days, after which the birds were slaughtered. A table of results is given, showing no significant effect of the treatments studied on the amino acid composition of the carcass, in spite of considerable differences in body wt. attributable to the diets tested. Correlations between carcass water content and concn. of individual amino acids were high ($r = 0.80$-0.92). Regression equations of essential amino acid concn. on carcass moisture concn. are given; F-values showed these equations to fit the data well. It is therefore concluded that essential amino acid may, under set conditions, be calculated on the basis of carcass moisture content. AJDW

119

Effects of storage and polyphosphates on the flavor volatiles of canned poultry meat.
Rao, C. S.; Day, E. J.; Chen, T. C.
Journal of Food Science 43 (2) 515-516 (1978) [9 ref. En] [MAFES, Poultry Sci. Dep., Mississippi State Univ., Mississippi 39762, USA]

The effects of storage and polyphosphates on the volatile components of canned broiler meat were investigated. The concn. of H_2S, methyl mercaptan, and saturated and total carbonyls of both control and polyphosphate-treated broiler meat increased slightly upon storage. A greater increase in unsaturated carbonyls was observed for the controls than for the polyphosphate-treated samples. During storage, the general trend of increasing thiobarbituric acid (TBA) values was not affected by the presence of polyphosphates; however, the

control samples had the highest TBA values throughout the observation period. All canned-samples exhibited a continued increase in free NH_3 content as the storage time advanced. Polyphosphates also retarded the formation of free NH_3 in canned broiler meat during storage as compared to controls. IFT

120

[Broiler meat quality in relation to amino acid nutrition.]

Grigor'ev, N. G.; Kal'nitskii, B. D.; Sychev, A. I.
Vestnik Sel'skokhozyaistvennoi Nauki, Moscow, USSR No. 3, 63-70 (1978) [9 ref. Ru, en, de, fr] [Vses. Nauchno-issled. Inst. Fiziologii, Biokhimii i Pitaniya Sel'skokhoz. Zhivotnykh, Borovsk, USSR]

Matched groups of 100-150 Cornish (C), Plymouth Rock (PR) or C × PR cross chicks were reared to broiler age (63 days) on (i) normal ration or no rations deficient in (ii) lysine, (iii) methionine, or (iv) lysine and methionine. Against a background of final live wt. in the order (i) > (iii) > (iv) > (ii), the % contents of edible parts in pre-slaughter wt. were, for (i)-(iv) resp., 82.8, 78.9, 79.6 and 80.8. 3-5 broilers from each group were used for meat analysis. Mean collagen contents with s.e. in breast muscles of (i), (ii), (iii) and (iv) were, resp., 2.43 ± 0.049, 2.884 ± 0.050, 2.606 ± 0.051, and 2.770 ± 0.032 g/100 g defatted tissue DM; and for biceps leg muscles, they were correspondingly 4.005 ± 0.049, 4.626 ± 0.073, 4.212 ± 0.051 and 4.412 ± 0.039 g/100 g defatted tissue DM. Data are presented for effect of amino acid deficiency or excess on muscle fraction composition, and the underlying metabolic processes are discussed. SKK

121

[Experimental results concerning use of some natural and synthetic pigmenting agents in diets for broilers.]

Bonsembiante, M.; Chiericato, G. M.
Rivista di Zootecnia e Veterinaria No. 1, 7-17 (1978) [41 ref. It, en] [Istituto di Zootecnia, Univ. degli Studi di Padova, Padua, Italy]

A total of 440 Hubbard chickens (264 males and 176 females), 4 wk of age at the start of the study, was used in a 4-day feeding trial conducted to evaluate effects of various dietary carotenoid sources on pigmentation of the shank, breast feather tract and dorsal cloacal area of chicken carcasses. Carotenoid sources studied were: Florafii Plus (an extract of marigold petal meal); Carofill Giallo (a β-apo-8'-carotenoic acid ethyl ester preparation); and corn gluten meal. Each supplement was added at a level calculated to increase xanthophyll concn. in the diet by 25-40 mg/kg. Control diets contained no carotenoid supplement. Carcass pigmentation was evaluated visually and by reflectance colorimetry. Tables of results are given. The results show that all 3 carotenoid supplements significantly increased carcass pigmentation as compared to the control diet; no significant differences between degrees of pigmentation achieved with the 3 carotenoid sources were observed. AJDW

122

Evaluation of bird chiller water for recycling in giblet flumes.

Lillard, H. S.
Journal of Food Science 43 (2) 401-403 (1978) [4 ref. En] [USDA Richard B. Russell Agric. Res. Cent., PO Box 5677, Athens, Georgia 30604, USA]

For tests of the feasibility of recycling water from the bird chiller in broiler processing plants, water samples from 8 points in a commercial plant were evaluated by the following criteria: faecal coliform levels, total aerobic counts, salmonellae incidence and levels, BOD and COD. Probably owing to a great dilution factor, water from the gizzard splitter was of better microbiological quality for recycling than water from the bird chiller but was higher in level of organic contaminants. If bactericidal treatment were omitted, water from the gizzard splitter would be preferable for recycling to giblet flumes. If bactericidal treatment is used, water from the bird chiller is preferable because of its lower level of organic contaminants. IFT

123

[Bacteriological features in evisceration of broilers.]

Terbijhe, R. J.
Tijdschrift voor Diergeneeskunde 103 (4) 232-236 (1978) [8 ref. NL, en] [Rijksuniv., Utrecht, Netherlands]

The total bacterial and Enterobacteriaceae counts in the pericloacal skin of broilers (5.3 log N/g and 4.0 log N/g, resp.) did not change very much during the process of evisceration. Internal organs (liver, heart) were severely contaminated, particularly by evisceration proper and manual removal of the intestines. Differences between levels of contamination of various skin samples evened out during evisceration. Possible reasons for the differences in contamination levels are discussed. RM

124

[Effect of feeding sunflower seed oil, pork fat and beef fat on protein and amino acid deposition in broiler carcasses.]

Aleksandrov, V. A.; Khlystova, L. F.
Doklady TSKhA [Sel'skokhozyaistvennaya Akademiya imeni K. A. Timiryazeva] No. 215, 67-72 (1976) [Ru]

White Plymouth broilers (divided equally into cocks and hens) were fed rations containing sunflower seed oil, pork fat or beef fat (amounts not given), and the feed protein utilization and amino acid composition of the carcasses of groups of 6 (3 male, 3 female) were determined at intervals up to 70 days. The max. contents of crude protein were observed in the groups receiving pork fat (17.4-19.2% vs. 14.0-16.3% from the other 2 groups). HBr

125

The effects of fasting on body composition, glucose turnover, enzymes and metabolites in the chicken.

Brady, L. J.; Romsos, D. R.; Brady, P. S.; Bergen, W. G.; Leveille, G. A.

Journal of Nutrition 108 (4) 648-657 (1978) [48 ref. En] [Dep. of Food Sci., Michigan State Univ., E. Lansing, Michigan 48824, USA]

Male broiler chicks (live wt. approx. 1200 g at the start of the experiment) were used in a study on effects of fasting for 1, 4 or 8 days on body composition. Tables of results are given. Mean values for birds fasted for 0, 1, 4 or 8 days resp. were: body wt. 1211, 1083, 922 and 778 g, liver wt. 30.5, 25.0, 18.2 and 11.9 g; kidney wt. 2.3, 2.4, 1.4 and 1.0 g; total body protein not determined, 216, 197 and 187 g; and total body fat not determined, 148, 109 and 61 g. AJDW

126

Union of Swiss Societies of Experimental Biology. Abstracts of the 10th annual meeting. [Conference proceedings]

Switzerland, Union of Swiss Societies of Experimental Biology

Experientia 34 (7) 894-962 (1978) [En]

Abstracts are published of papers presented at the meeting, held at Davos, 19-20 May 1978. The abstr. include M-line in chicken muscle, by C. W. Heizmann, I. E. Hotz & H. M. Eppenberger (p. 911); Low molecular weight calcium-binding proteins from chicken muscle, by E. E. Strehler, H. M. Eppenberger & C. W. Heizmann (p. 919); The metabolism of (^{14}C)-aflatoxin B_1 in pigs [including a study of distribution of ^{14}C in edible tissues], by J. Lüthy, U. Zweifel & C. Schlatter (p. 926); Proteolytic enzymes in wheat ears during maturation, by U. Feller (p. 940); and Proteolytic activity, lactic acid production, N-acetyl-D-glucosamine fermentation and plasmids in Lactobacillus helveticus subsp. jugurti, by M. Smiley, R. Maret & V. Fryder (p. 955). DIH

127

[New children's food products and their hygienic evaluation.]

Petrovskii, K. S.; Khovaeva, L. A.

Gigiena i Sanitariya No. 6, 41-43 (1978) [14 ref. Ru] [I Moskovskii Med. Inst. im. I. M. Sechenova, Moscow, USSR]

The effects of addition of various commonly used concentrates (5, 7.5 or 10% sodium caseinate, 5, 7.5 or 10% coprecipitate) and starch (1.5, 2.0 or 2.5% native starch or 1.5, 2.0 or 2.5 modified (gelling) starch) on the nutritive value of Kroshka, a popular chicken-based infant food, were studied in rat experiments. It was established that incorporation of all these adjuvants, particularly at higher concn., could have a detrimental effect on the quality of the product. The need to control the addition of such highly active adjuvants to new children's foods is stressed. · HBr

128

[Dissection and chemical compositions and technological characteristics of meat of hens.]

Trojan, M.; Kijowski, J.; Niewiarowicz, A.; Pikul, J.

Gospodarka Miesna 29 (10) 20-22 (1977) [7 ref. Pl]

Hens aged 18-24 months slaughtered in the Gniezno and Poznan (Poland) poultry factories after completed laying were used. They consisted of (i) light breed (Leghorn), (ii) middle-heavy uspecified breed, and (iii) heavy breed (Cornish White Rock) birds. Groups of 10 (i)-(iii) carcasses were dissected; and chemical analysis was carried out on groups of 5-7 (i)-(iii) carcasses. Data on dissection results included for (i)-(iii) resp. as % of carcass wt.: breast muscles, 13.9, 19.2 and 18.4; leg muscles, 17.2, 22.0 and 21.5; fat around vent, 6.0, 5.5 and 7.2; skin + subcutaneous fat, 10.1, 10.3 and 13.4; and bones, 35.7, 28.7 and 26.3. Protein (N × 6.25) contents of breast muscles of (i)-(iii) were resp. 23.3, 20.6 and 22.8%; and in leg muscles, they were 21.3, 17.8 and 20.0%; fat contents of breast muscles were 1.9, 2.4 and 5.5% resp.; and those of leg muscles were 3.8, 8.3 and 9.6%. Water retention capacity increased in the order (i) > (ii) > (iii) (74, 93 and 171% for breast muscles; and 48, 40 and 154% for leg muscles); fat emulsifying capacity was greater in leg than in breast muscles and increased in both in the order (i) > (ii) > (iii). SKK

129

[Effects of breed and sex on the total weight of skeletal muscle in the chicken.]

Iwamoto, H.; Takahara, H.; Okamoto, M.

Japanese Journal of Zootechnical Science [Nihon Chikusan Gakkai-ho] 48 (6) 308-314 (1977) [20 ref. Ja, en] [Fac. of Agric., Kyushu Univ., Fukuoka-shi 812, Japan]

Male White Cornish and both male and female Rhode Island Red, Barred Plymouth Rock and White Leghorn chickens were used in a study on bread and sex effects on muscle wt. in the carcass. Regressions relating muscle wt. to live wt. were determined. The proportion of muscle wt. increased steadily with increasing live wt.; the pattern of increases differed between breeds and sexes. Growth curves also tended to differ between breeds and sexes. On the basis of these values, the meat production potential of the breeds and sexes studied was evaluated. White Cornish birds tended to have the highest meat production potential. At high live wt., males had higher meat production potential than females in all breeds studied. [From En summ.] AJDW

130

[A study on improvement of broiler breeder stock for broiler production.]

Ohh, B. K.

Korean Journal of Animal Science 19 (5) 343-350 (1977) [28 ref. Ko, en] [College of Agric., Seoul Nat. Univ., Suwon 170, Korea]

Improvement of broiler breed stock for broiler production was studied using the records of 45 crosses produced by 3 way cross of 6 strains of paternal line and 7 strains of maternal line, and strains of commercial broiler stock. Data are given for carcass % of the crossbreds studied. [From En summ.] SP

131

[Cross-contamination in kitchens during preparation of frozen chickens.]
Wit, J. C. de; Broekhuizen, G.; Kampelmacher, E. H.
Voeding 39 (7) 208-210 (1978) [13 ref. Nl, en] [Lab. Levensmiddelenmicrobiologie & Hygiene, Landbouwhogeschool, Wageningen, Netherlands]

Studies were conducted in 60 kitchens, using frozen chickens artificially contaminated with a non-pathogenic indicator organism (Escherichia coli K12). Incidence of contamination of various items of equipment with E. coli K12 was evaluated; a table of results is given. Of the items of equipment studied, incidence of contamination ranged from 14% of 51 towels to 100% of 17 chopping boards. E. coli K12 positive samples were found in 7 of 11 kitchens after cleaning, and in 10 of 27 kitchens after washing up. No salmonellae were found in the sinks of any of the kitchens studied. Implication for the danger of cross-contamination of kitchens with salmonellae from frozen poultry are discussed. AJDW

132

[Mercury content of poultry meat.] Zum Quecksilbergehalt von Geflügelfleisch.
Weigert, P.
Zeitschrift für Lebensmittel-Untersuchung und -Forschung 166 (6) 344-345 (1978) [8 ref. De, en] [Vet.-Untersuchungsstelle der Bundeswehr VI, Schleissheimer Strasse 416, D-8000 Munich 45, Federal Republic of Germany]

The muscle and fatty tissue of 101 deep-frozen fattened stewing chickens was tested for Hg content. After wet digestion, Hg content was determined by cold-flameless AAS. The average Hg content in muscle and fatty tissue was 0.004 and 0.001 p.p.m. of fresh wt., resp. and thus was very low. The recommended max. value of 0.08 p.p.m. was exceeded in 2% of the samples analysed. AS

133

Effects of postmortem aging on chicken breast muscle sarcoplasmic reticulum lipids.
Currie, R. W.; Hay, J. D.; Wolfe, F. H.; Sanders, E. J.
Canadian Journal of Animal Science 58 (2) 143-149 (1978) [23 ref. En, fr] [Dep. of Food Sci., Univ. of Alberta, Edmonton, Alberta, T6G 2E3 Canada]

134

The use of sweet potato in chicken rations for growth and egg production.
Mohamed, O. E.; Omar, E. M.; Kamar, G. A. R.
Egyptian Journal of Animal Production 14 (2) 229-235 (1974) [7 ref. En, ar] [Fac. of Vet. Med., Cairo Univ., Giza, Egypt]

200 Fayoumi chicks (1 wk of age at the start of the experiment) were used in a study on effects of replacement of corn by fresh sweet potato as a source of carbohydrate and vitamin A in the diet on growth, egg production and meat quality. Diets studied contained white or yellow corn without added sweet potato, or had 50-75% (DM basis) of the corn replaced by fresh sweet potato. The birds were slaughtered at 13 wk of age, and their meat was evaluated organoleptically. The results show that meat from chickens fed the diet with 75% replacement of corn by sweet potato had the best taste. AJDW

135

The effect of balancing amino acids in the ration on glands and endocrines of chickens.
Kamar, G. A. R.; El-Saman, S.; Shoukry, S.
Egyptian Journal of Animal Production 14 (2) 255-263 (1974) [5 ref. En, ar] [Anim. Production Dep., Fac. of Agric., Cairo Univ., Giza, Egypt]

60 chicks (equal numbers of males and females) were used in a 14 wk feeding trial conducted to evaluate effects of diets with unbalanced amino acid concn. or with balanced amino acid concn. (fed at low or high levels) on the wt. and % of various tissues in the carcass. Diets based on various protein sources were used. Tables of data are given for wt. and % liver, kidney, fat and other organs and tissues in the carcass. Liver wt. of groups receiving low levels of balanced amino acids were greater than those of groups receiving high levels. Kidney wt. were unaffected by the treatments studied. Fat wt. was not influenced by the amino acid balance or level; however, fat wt. were higher for groups receiving fish meal as the animal protein source than in those receiving skim-milk. AJDW

136

[Studies on the nutritive values of locally produced oil meals. IX. Studies on the nutritive values of detoxicated castor bean meal in broiler rations.]
Lee, K. H.; Han, I. K.; Chung, C. Y.
Korean Journal of Animal Science 20 (2) 147-155 (1978) [24 ref. Ko, en] [Coll. of Agric., Seoul Nat. Univ. Suweon, Korea]

440 broiler chicks were fed detoxicated castor bean meal at 0, 5, 10, or 20% level in combination with soybean oil meal (0-24%), perilla oil meal (0-12%) and sunflower seed oil meal (0-10%), as starter and finisher diets, to study the nutritive effect of the detoxicated castor bean meal. Results show that carcass rate [carcass yield?] tended to decrease as castor bean meal level in the diets increased and was significantly inferior (at the 5% level) for the diet containing 20% castor bean meal. [From En summ.] SP

137

Rapeseed oil meals in feeding poultry.
Lipinska, H.; Gawecki, K.; Lawniczak, L.; Jankowska, D.; Frankiewicz, H.; Kawalec, B.
Roczniki Naukowe Zootechniki, Monografie i Rozprawy No. 10, 1-128 (1978) [137 ref. En, pl, ru] [Inst. of Anim. Nutr. & Food Management, Acad. of Agric., Poznan, Poland]

This report on studies on use of rapeseed meals in poultry feed includes the following sections: Review of results of investigations, by H. Lipinska (pp. 5-15); Rapeseed meals from continuous and discontinuous extractions, by H. Lipinska (pp. 17-67); Detoxicated rapeseed meals. I. Chemical composition, digestibility of nutrients and biological value of protein, by H. Lipinska (pp. 69-87); Detoxicated rapeseed meals. II. Metabolizable energy, by K. Gawecki, H. Lipinska & L. Lawniczak (pp. 88-96); and Detoxicated rapeseed meals. III. Tests on growing chicks, [including information for the dressing %, liver wt. and protein, ash and ether extract contents of the body of chickens fed detoxicated rapeseed meals] by K. Gawecki, H. Frankiewicz & B. Kawalec (pp. 97-128). AJDW

138

[Disinfectant residues in meat. II. Detection in meat and fat after disinfection of animal houses and factories.] Rückstände von Desinfektionsmitteln in Fleisch. II. Nachweis von Desinfektionsmitteln in Fleisch und Fett nach der Stall- und Betriebsdesinfektion.
Schmidt, U.; Cremmling, K.
Fleischwirtschaft 58 (4) 648-650, 653-654; 599 (1978) [many ref. De, en] [Bundesanstalt für Fleischforschung, 8650 Kulmbach, Federal Republic of Germany]

The absorption of disinfectant residues was studied in meat and fat slices laid on polyethylene surfaces disinfected with 1% solutions of an ampholytic soap, a quaternary NH_4^+ compound, an active Cl_2 compound and formaldehyde, with or without rinsing. The first samples laid on unrinsed surfaces contained disinfectant residues (i.e. 240, 600, 4000 and 800 µg/kg resp.). On rinsed surfaces, residues were found in the foods only when surface-active compounds had been used (ampholytic soap, quaternary NH_4 compound): 70-90% of the disinfectant (about 1 µg/cm^2) was absorbed by the first slice of meat, subsequent pieces removing about 50% of the remaining disinfectant to the limit of detection. Even without rinsing, the limit of detection was reached after removal of 4 samples. Residue uptake was not affected by contact time or pressure. Residues remained in a 1 mm surface layer of meat. In chicken houses (occupied or unoccupied) disinfected with a phenol preparation, residues were found in meat and organs of chickens brought into the houses or left there, and slaughtered within 36-42 h of the disinfection, but not earlier or later. No residues were found after formaldehyde disinfection. A 5 day interval between disinfection and slaughter is suggested. [See FSTA (1978) 10 11C403 for part I.] RM

139

Enterotoxigenic staphylococci in raw meats.
Pandurangarao, C. C.
Journal of Food Science and Technology, India 14 (5) 224-225 (1977) [10 ref. En] [Indian Vet. Res. Inst., Izatnagar, India]

66 buffalo meat, 55 pork, 12 mutton and 7 chicken meat samples collected from Bareilly market were examined for enterotoxigenic staphylococci. 10% NaCl broth for enrichment followed by surface streaking on ETGPA medium of Baird-Parker was employed for isolation. 18 (27%) buffalo, 14 (25%) pork, 3 mutton and 1 chicken meat samples revealed coagulase positive staphylococci. 5 isolates from buffalo meat, 2 from pork and 1 from mutton were found to be enterotoxigenic. As many as 6 out of 8 enterotoxigenic isolates produced enterotoxin C either alone or in combination with others. Enterotoxigenic staphylococci from buffalo meat, pork and mutton are reported for the first time in India. AS

140

Carry-over effect of aflatoxins into broiler meat. [Lecture]
Mintzlaff, H. J.; Lötzsch, R.; Leistner, L.
Zeszyty Problemowe Postepow Nauk Rolniczych No. 189, 63-67 (1977) [10 ref. En, pl, ru] [Bundesanstalt für Fleischforschung, 8650 Kulmbach, Federal Republic of Germany]

Broilers were fed diets containing 0.025, 0.1, 0.5, 1.0, 2.0, 5.0, 10.0 or 15.0 p.p.m. aflatoxin B_1 for 8 wk. Diets also contained about 5 × as much aflatoxin G_1 and small amounts of B_2 and G_2. Aflatoxin B_1 residues in liver, thigh and breast were determined by the AOAC method, which is sensitive to 0.1 parts/billion (results for aflatoxin B_1 are tabulated). No residues were detectable at feed levels <0.1 p.p.m.; above this level residues in liver and thigh increased with level in feed, and residues in breast increased more slowly with level in feed. Mean levels (parts/billion) of residues of aflatoxin B_1 (with ranges in parentheses) in liver, thigh and breast, were at 0.1 p.p.m. in the feed, 0.12 (0-0.35), 0.01 (0-0.11) and 0.02 (0-0.23), resp.; and at 15.0 p.p.m. in the feed were 15.45 (9.80-21.10), 9.76 (4.80-24.20) and 6.33 (3.30-12.20), resp. Aflatoxin M_1 residue levels were of the same order as aflatoxin B_1, while G_1 levels were higher, probably reflecting feed levels. Only traces of aflatoxins B_2 and G_2 were found in broilers. [See FSTA (1978) 12C454.] DIH

141

A note on the iron content of meat in relation to iron deficiency.
Jenkins, S. A.

Meat Science 1 (4) 277-282 (1977) [25 ref. En] [Pye Res. Cent., Walnut Tree Manor, Haughley Green, Suffolk IP14 3RS, UK]

Data are given for the haemoglobin concn. of the blood and Fe concn. of the serum and muscle of animals immediately after slaughter. Mean values with s.e. for muscle Fe concn. (mg/100 g wet wt.) were (with numbers of samples in parentheses): 5-12 yr old cows (28), 2.45 ± 0.17; 1-1.5 yr old beef steers (56), 2.03 ± 0.18; 1-1.5 yr old heifers (6), 2.06 ± 0.16; 6-month old pigs (50), 1.12 ± 0.13; 51-day old chickens (24), 0.47 ± 0.03; and 8-month old lambs (10), 1.09 ± 0.06. These values are appreciably lower than those quoted by McCance & Widdowson [Medical Research Council Special Report Series No. 297 (1960)]. Possible causes of this apparent decrease in the Fe content of meat are discussed, and possible implications for human Fe deficiency are considered. AJDW

142

Gentian violet and polychlorinated biphenyls in animal diets.

Olentine, C. G., Jr.

Dissertation Abstracts International, B 38 (1) 89: Order No. 77-13611, 76pp. (1977) [En] [Clemson Univ., Clemson, S. Carolina 29631, USA]

When ^{14}C-labelled gentian violet was fed to chickens, no detectable tissue residues were found in the muscle, fat or skin 48 h after dosage; low (<0.05 p.p.m.) concn. were found in the liver, kidneys and eggs. Effect of feeding polychlorinated biphenyls to mice was also studied. HBr

143

Possible influence of sex and embryonic content on accumulation of some organochlorine pesticides in broilers.

Kan, C. A.; Jonker-den Rooyen, J. C.; Tuinstra, L. G. M. T.; Roos, A. H.; Traag, W.

Journal of Agricultural and Food Chemistry 26 (3) 618-621 (1978) [17 ref. En] [Spelderholt Inst. for Poultry Res., Min. of Agric. and Fisheries, Beekbergen, Netherlands]

Low levels of hexachlorobenzene (HCB), α-, β-, and γ-hexachlorocyclohexane (HCH), heptachlor, p,p'-DDT, and dieldrin were administered via feed to broilers for 6 wk. The treatments did not influence growth rate or feed conversion. The mean accumulation ratios (concn. of pesticide in fat to its concn. in diet) found were: HCB 11, α-HCH 3, β-HCH 14, γ-HCH 2, heptachlor(epoxide) 5, DDT (total) 10, and dieldrin 11. Male broilers had significantly higher accumulation ratios than females. Organochlorine pesticides carried over from parents through the egg did not influence the accumulation ratios. At the end of rearing (6 wk), losses in faeces as a proportion of daily intake were: HCB 12%, α-HCH 5%, β-HCH 12%, γ-HCH 4%, heptachlor (epoxide) 1.5%, DDT (total) 7%, and dieldrin 14%. AS

144

[Meat preserves. Chicken in jelly. Specification.]

Union of Soviet Socialist Republics, Gosudarstvennyi Komitet Standartov

Soviet Standard **GOST 608-77**, 3pp. (1977) [Ru]

This standard, which supersedes **GOST 608-56**, applies to canned chicken in jellied broth. Specific requirements include: meat content, ⩾60%; jelly content, ⩽40%; m.p. of jelly, ⩾18°C; salt content, 1.0-1.4%; and Sn salts content, ⩽200 mg/kg. There is no tolerance for Pb or foreign admixtures. The canned product has a shelf life of 2 yr from date of production. KME

145

[Meat preserves. Chicken ragout in jelly. Technological requirements.]

Union of Soviet Socialist Republics, Gosudarstvennyi Komitet Standartov

Soviet Standard **GOST 7991-77**, 3pp. (1977) [Ru]

This standard, which supersedes **GOST 7991-56**, applies to canned, sterilized chicken ragout in jelly. Specific requirements include: m.p. of jelly, ⩾18°C; salt content, 1.0-1.4%; Sn salts, ⩽200 mg/kg; and Pb salts, no tolerance. Max. shelf life is 2 yr. KME

TURKEYS

1

[Compensatory growth after protein undernutrition of large turkeys. I.]

Aerts, J. V.; Groote, G. de; Fontaine, G.; Moermans, R. J.

Revue de l'Agriculture 30 (4) 991-1015 (1977) [22 ref. Fr, en] [Sta. de Petit Elevage, Merelbeke, Belgium]

Within the framework of studies on compensatory growth capacity of large turkeys after early protein undernutrition, it was found that neither the temporary undernutrition nor the form of the diet had any effect on dressing wt., carcass quality or tenderness, but meat from females was significantly more tender than that from males. RM

2

Thermal inactivation of Clostridium perfringens enterotoxin.

Naik, H. S.; Duncan, C. L.

Journal of Food Protection 41 (2) 100-103 (1978) [15 ref. En] [Food Res. Inst., Univ. of Wisconsin, Madison, Wisconsin 53706, USA]

Thermal inactivation studies of C. perfringens enterotoxin revealed that biological activity was destroyed within 5 min at 60° C, whereas about 10% or less residual serological activity could be detected even after 80 min of exposure at 60° C in saline or in phosphate buffer, pH 7.0 or 8.0. Loss of serological activity was more rapid at 60° C at pH 5.4 or 6.0 than at pH 7.0 or 8.0. Flocculation of enterotoxin was visible in phosphate buffer after 20 min of exposure at 60° C, pH 5.4, 70 min at pH 6.0 but not at all at pH 7.0 or 8.0. Rapid loss of serological activity also occurred at 60° C in cooked turkey, chicken gravy and beef gravy as well as in 5, 10 and 20% bovine serum albumin and gelatin. < 12% of the heat-inactivated serological activity could be recovered by treating toxin in the food samples with urea for 1 h at room temp. However, serological activity of toxin heated in phosphate buffer could not be reactivated by urea treatment. AS

3

The effect of unconventional protein on the microbial level of emulsion sausage. [Lecture]

Plimpton, R. F., Jr.; Ockerman, H. W.; Fogle, D. R.

Proceedings of the European Meeting of Meat Research Workers No. 23, O6:1-O6:12 (1977) [10 ref. En, Ru] [Ohio State Univ., Columbus, Ohio 43210, USA]

Four bologna-type formulations using 3 protein sources were tested for microbial counts in the course of processing and during 30 days cold storage. The protein sources used were: boneless beef (25% fat) serving as control, 80% beef + 20% reconstituted textured protein concentrate; 80% beef + 20% mechanically-deboned turkey meat; and 60% beef + 20% reconstituted soy protein + 20% mechanically-deboned turkey meat. A marked difference in bacterial load was noted after 10 days storage, with all-beef products showing a relatively reduced microbial level. The products containing soy maintained their increased bacterial level compared with the all-beef product for all 30 days of storage. The product containing beef and turkey also resulted in higher bacterial count after 20 days, but by 30 days the count was similar to that of the beef control, suggesting that the beef-turkey product was entering its microbiological stationary growth phase. After 30 days, both the soy-containing products showed markedly higher bacterial counts than the all-beef and beef-turkey products. [See FSTA (1978) 10 8S1048.] STI

4

Effect of spin chilling and freezing on bacteria on commercially processed turkeys.

Reddy, K. V.; Kraft, A. A.; Hasiak, R. J.; Marion, W. W.; Hotchkiss, D. K.

Journal of Food Science 43 (2) 334-336 (1978) [18 ref. En] [Dep. of Food Tech., Iowa State Univ., Ames, Iowa 50011, USA]

A study was made of the effect of spin chilling and subsequent freezing on possible spread of salmonellae and other bacteria on commercially processed turkeys in a federally inspected plant. 61 turkeys were examined before and after spin chilling, after being 'shell-frozen' in brine, after blast freezing and after being held in a freezer storage room. After spin chilling, levels of all organisms tested were reduced and no salmonellae were recovered. Coagulase positive staphylococci persisted on turkeys during processing and after freezing. As expected, freezing caused further decreases in bacterial populations, but the spin chilling operation itself was highly effective in reducing counts. No undue health hazard was observed from chilling procedures. IFT

5

Effect of bird type, growers and season on the incidence of salmonellae in turkeys.

McBride, G. B.; Brown, B.; Skura, B. J.

Journal of Food Science 43 (2) 323-326 (1978) [18 ref. En] [Dep. of Food Sci., Univ. of British Columbia, Vancouver, British Columbia V6T 1W5, Canada]

The incidence of salmonellae in 25 turkey flocks of hens, toms and broilers entering a processing plant was investigated by representative sampling of caeca and intestines in each flock. Considerable flock to flock variability was found (0-72%) with ¼ of the flocks having > 10% infection. Variability between flocks from different growers and among flocks from each grower was evident. Certain growers were found to repeatedly ship salmonellae-infected flocks. There was no difference in the infection levels between the different bird types and

the season effect was not significant. It was possible to pinpoint specific salmonellae-infected flocks that may be contributing to the dissemination of salmonellae in the plant. IFT

6

[Content of toxic elements in meat.] Der Gehalt des Fleisches an toxischen Elementen.
Hecht, H.
Berichte über Landwirtschaft 55 (4) 828-834 (1977, publ. 1978) [15 ref. De, en, fr] [Inst. für Chemie & Physik, Bundesanstalt für Fleischforschung, Oskar-von-Miller-Strasse 20, 8650 Kulmbach, Federal Republic of Germany]

Contents of toxic and certain non-toxic elements were determined in (i) pig longissimus dorsi muscle (ii) pig liver, (iii) pig kidney, (iv) beef muscle (v) turkey lower thigh muscle and (vi) turkey breast muscle. Tabulated data show contents of Pb, Cd, Zn and Cu in (i)-(iii) and (vi)-(vii) and of As, Sb, Se and Hg in (i) and (iv); number of samples, means, s.d. and ranges found are given. Contents found are compared with max. tolerated levels in a proposed Federal regulation for (i); these are (parts/billion) As 100, Pb 500, Cd 80, and Hg 80. No samples exceeded Pb and Cd tolerances, 1 sample of 68 had > 100 parts As/billion (mean 31.4), but 5 of 71 samples exceeded Hg tolerances. Mean contents of Pb and Cd (p.p.m.) in (ii) were 0.032 and 0.19, resp. and in (iii) 0.05 and 0.54. Cd levels were considered surprisingly high. Proposed max. levels in (iv) of As and Hg are 50 and 20 parts/billion, resp. Ranges found (parts/billion) were As 0.12-5.16, and Hg 0.46-4.48. Element contents in turkey muscle showed differences between the 2 muscles; these differences were greater for Zn and Cu contents than for Pb and Cd contents. Contents of all 4 elements were higher in (v) than in (vi). Proposed max. levels of Pb and Cd in (v) and (vi) are as for (i); none of 34 samples (in each case) exceeded these levels. In general contents of all toxic elements were well below the proposed tolerances in all muscle samples examined. DIH

7

Acceptance of summer sausages prepared with beef, pork and turkey combinations.
Korschegen, B. M.; Baldwin, R. E.; Russell, W. D.
Food Product Development 12 (1) 84 (1978) [3 ref. En] [Dep. of Food Sci. & Nutr., Univ. of Missouri-Columbia, Columbia, Missouri, USA]

4 formulas of sausages investigated were: 90% beef and 10% pork (control); 50% pork and 50% turkey; 50% turkey, 33.3% beef plate meat, and 16.7% lean cow meat; and 66.7% turkey and 33.3% pork. The sausages were held in a smokehouse for 1 wk and then evaluated after 10 wk of ageing. Evaluation employed a facial hedonic scale with numerical values assigned to each expression. Values ranged from 1, denoting largest frown to 5 indicating largest smile. Mean panel scores suggest that all sausage formulas are acceptable, and analysis of variance shows no significant differences in panel scores among the 4 sausage types. VJG

8

Performance and carcass quality of broiler tom turkeys subjected to a post-hatch fast and offered starting rations of different nutrient concentration.
Moran, E. T., Jr.
Canadian Journal of Animal Science 58 (2) 233-243 (1978) [18 ref. En, fr] [Dep. of Anim. & Poultry Sci., Univ. of Guelph, Guelph, Ontario, N1G 2W1 Canada]

6 h after hatching, tom turkeys (strain Nicholas Medium) were either fasted for 24 h or received early access to feed and water, followed by feeding each group either a normal nutrient ration (28% crude protein) or a high nutrient ration (30% crude protein). Results for effects of these treatments on carcass quality showed a lowering of carcass fleshing assessment by perinatal fasting, as compared to turkey poults allowed access to feed. There were no significant differences for conformation grades and % carcass defects for fed vs. fasted and normal vs. high nutrient rations treatments. SP

9

Ultrastructural differences in mitochondria of skeletal muscle in the prerigor and rigor states.
Hegarty, P. V. J.; Dahlin, K. J.; Benson, E. S.
Experientia 34 (8) 1070-1071 (1978) [24 ref. En] [Dep. of Food Sci. & Nutr., Univ. of Minnesota, St Paul, Minnesota 55108, USA]

Adult turkeys were killed and semitendinosus muscle was removed immediately from 1 limb, and fixed for electron microscopy. The other muscle was removed and fixed after development of rigor mortis (6-8 h at 20°C). Transmission electron micrographs show that loss of mitochondrial cristae and matrix and appearance of intramitochondrial dense inclusions occurred in rigor muscle before any observable changes in myofibrillar proteins. Rigor muscle pH was 5.5-5.7, and changes observed in mitochondria may be due to pH drop, in which case care in preparation of muscle samples to prevent artefacts from pH decline is necessary. DIH

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Large turkey commercial strain comparisons of performance, carcass quality and meat yield during 1969 and 1977.
Moran, E. T., Jr; Leeson, S.; Summers, J. D.
Canadian Journal of Animal Science 58 (2) 291-302 (1978) [13 ref. En, fr] [Dep. of Anim. & Poultry Sci., Univ. of Guelph, Guelph, Ontario N1G 2W1, Canada]

During 1969 and 1977, 2 commercial strains of large turkey common to Ontario for each yr were characterized with respect to various aspects of carcass quality and yield. Feeds, facilities and procedures employed were comparable between the 2 yr. In compliance with commercial practice, toms were slaughtered at 24 and hens at 22 wk of age in 1969, while in 1977 marketing was 3 wk earlier. A comparison of final body wt. between 2 test yr showed them to be similar, as was carcass quality

with respect to conformation, and breast and back finish. Fleshing was less in 1977 relative to 1969; however, no differences were apparent for carcass yield or the proportion of the various commercial cuts. During 1969, 1 strain had a better fleshing assessment than the other; however both remained largely within the grade A category and no statistically significant differences in the various aspects of yield appeared. In 1977, the separation of fleshing grade between the test strains was greater and alterations in the % of breast and its meat content were detected. The ability to detect strain effects for carcass quality and yields more easily during 1977 than in 1969 was attributed largely to differing degrees of sexual maturity. The absence of overt carcass differences between the 2 test yr, conversely, was rationalized on the basis of a relative similarity in stage of development. AS

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Inhibition of warmed-over flavor in retorted turkey by antioxidants formed during processing.

Einerson, M. A.; Reineccius, G. A.

Journal of Food Processing and Preservation 1 (4) 279-291 (1977) [42 ref. En] [Dep. of Food Sci. & Nutr., Univ. of Minnesota, St. Paul, Minnesota 55108, USA]

Retorted turkey meat (retorted in sealed cans at 121°C for 50 min) was evaluated for sesceptibility to warmed-over flavour by means of organoleptic evaluation and the thiobarbituric acid (TBA) test. The retorted turkey was found to have significant resistance to development of warmed-over flavour which was not found in less severely cooked turkey. This resistance was shown to be due to the presence of water-soluble, low mol. wt. antioxidative substances. These substances are probably formed as the result of browning interactions which occur in the meat during retorting. Indications are that these compounds inhibit warmed-over flavour by acting as primary antioxidants, interrupting the free radical mechanism characteristic of lipid oxidation. AS

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